

OBSERVATIONS
ON THE
MEANS OF EXCITING A SPIRIT OF
NATIONAL INDUSTRY;
CHIEFLY INTENDED TO PROMOTE THE
AGRICULTURE, COMMERCE,
MANUFACTURES, AND FISHERIES,
OF
SCOTLAND.

IN A SERIES OF LETTERS TO A FRIEND.
WRITTEN IN THE YEAR ONE THOUSAND SEVEN HUNDRED
AND SEVENTY-FIVE.

By JAMES ANDERSON,
AUTHOR OF THE ESSAYS RELATING TO AGRICULTURE AND
RURAL AFFAIRS.

Resolve, resolve, and to be men aspire.....
Let godlike Reason, from her sovereign throne,
Speak the commanding word I will, and it is done.
THOMSON.

VOLUME THE FIRST.

D U B L I N:
PRINTED FOR S. PRICE, W. AND H. WHITESTONE, J. WILLIAMS,
W. COLLES, W. WILSON, C. JENKIN, T. WALKER, L. FLIN,
L. WHITE, J. EXSHAW, J. BEATTY, AND J. PARKER.

M DCC LXXIX.

OBSERVATIONS

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VOLUME 100 FIRST

D U I N

NAVY ON THE

NAVY ON THE

TO HIS GRACE
THE
DUKE OF BUCCLEUGH,
THE FOLLOWING OBSERVATIONS,
TENDING TO PROMOTE
THE
AGRICULTURE, COMMERCE,
MANUFACTURES, AND FISHERIES,
OF
SCOTLAND;

ON THE PROSPERITY OF WHICH
THE WELL-BEING OF EVERY INDIVIDUAL IN THAT AN-
TIENT KINGDOM MATERIALLY DEPENDS;

AND
TOWARDS THE IMPROVEMENT OF WHICH
HIS GRACE,
AT A VERY EARLY PERIOD OF LIFE,
HAS SHewn AN ALMOST UNEXAMPLED DEGREE OF ATTENTION:

ARE,
WITH THE GREATEST RESPECT,
MOST HUMBLy INSCRIBED

BY
THE AUTHOR.

P R E F A C E.

IF the writer of the following letters had known less of the world, he would have offered them to the public with less reluctance than he now does. Youth is sanguine in its expectations, and hopes that mankind in general will enter warmly into any plan for improvement that may be proposed with a rational prospect of success : but experience corrects these first intemperate fallies, and throws a chilling damp upon the mind, when it recollects the many bars that unavoidably come in the way of every generous undertaking.

It is vain to hope, that the institutions of such a fallible creature as
man

man is, can ever be perfect; it is equally foolish to expect that any proposed improvement will be faultless. There is, therefore, room for continual improvements; but there is not at all times an equal chance for these improvements taking place. Every stage in the progress of civil society, is naturally fitted to encourage some peculiar passions more than others. The nature of the predominant passions determine the nature of the vices that most prevail; and these necessarily determine the nature of the virtues of the times. Hence it happens, that although truth and virtue remain for ever the same; yet to us, who view them through the medium of these ever-varying passions,

ons, they seem to be perpetually changing. What obtained the highest applause in one age, is viewed by the next with the utmost indifference, and another set of ideas comes to be accounted honourable, which were formerly held in abhorrence, or considered as a disgrace of the human species. In this manner, although truth and reason gradually prevail in some particulars over prejudice and error, mankind in other particulars adopt new prejudices, and fall into errors formerly unknown, which come gradually to be combated and supplanted in their turn. Happy is it for that nation, in which the prejudices that are coming into fashion, are of a nature less destructive to society

society than those that are falling into disrepute!

If we take a retrospective survey of the changes that have taken place in Europe in respect of this particular, we shall find, that before the art of government was well understood, and while the arm of the civil magistrate was too weak to compel individuals to submit to the salutary correction of the laws, each turbulent leader of a band of robbers exercised within his own precincts, an almost unlimited authority, which subjected those who had the misfortune to incur his displeasure to the most unjust oppressions, sometimes to the most wanton exertions of barbarous and unrelenting cruelty.

IN

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IN these circumstances the injured sufferer, seeing no earthly power to which he could apply for relief, was under the necessity of either tamely submitting to the will of the oppressor, or of depending upon the vigour of his own arm, or that of some bold adventurer, for redress. This roused the soul to deeds of daring hardihood, and gave occasion for those amazing feats of heroism which so eminently characterise, what we call the middle ages. The universal applause that was bestowed upon such men as rescued the injured from oppression, was an irresistible spur to those daring minds, which panted after glory, and made them strain every nerve to obtain that high prize for which mankind

mankind have in all ages most emulously contended, and produced such exertions of disinterested generosity and heroic valour as are now accounted fabulous, because they seem so far to exceed the present human powers. The annals of those times are blotted with vices that make the mind shudder with horror; but the virtues which then adorned individuals were great, and manly in extreme. The soul was impetuous, but not debased; the judgment was uninformed, but the will upright, and the errors into which these romantic heroes fell, were oftner those of the head than of the heart.

In an after period, when mankind sick of the disorders that spring from
anarchy

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anarchy and misrule, were desirous of obtaining those blessings that result from a well-ordered government; when the mind, freed at length from the fetters in which it had been long enthralled by the artful impositions of an ambitious priesthood, began to develope its powers, to feel its own importance, and to assert those unalienable privileges to which it found itself intitled; the charms of liberty appeared to be so irresistibly engaging, that nothing seemed too great to be sacrificed for attaining it, and therefore it was pursued with an intenseness of ardour that no opposition could resist. In these circumstances individuals, forgetting their own particular danger, emulously contended who should

should be foremost in exposing themselves in defence of the community at large. Patriotism was not then an empty name, but an active invigorating principle, that warmed and elevated the soul with a firm and manly fortitude, which those who could not imitate, were forced with reverence to admire.—But soon was this genuine principle corrupted, and by the arts of designing men was converted to the worst of purposes. The same age produced a Hampden, a Russell, a Sydney, and—a Cromwell.

At length the auspicious æra arrived, when the constitution of this country was secured upon the broad and stable base of universal liberty;
when

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when the laws became binding to the King upon the throne, and accessible to the beggar on the dunghill; when property was perfectly secured, and “every man could sit under the shade of his own fig-tree, and eat the fruit of his own vine.” In these circumstances there was no longer room for exercising those acts of private heroism that were almost unavoidable in former ages. The disinterested ideas that necessarily accompanied these, came to be gradually less and less cherished, and at length became so utterly unfashionable as to be stigmatized with the now despised epithet *romantic*. An extended commerce introduced riches, and riches luxury. The mind, no longer alarmed with the fear of being
by

by violence, deprived of those blessings it held most dear, forgetting the care of *defending*, became only studious to *enjoy*. When man no longer stood in need of the immediate assistance of his fellows, to ensure his own personal safety, he became less anxiously solicitous about the private welfare of others; and he had often occasion to view his neighbours in the disgusting light of *rivals*, instead of the more endearing connection of friends and *protectors*. Having thus no object from without to employ the active faculties of the soul, it is left at full liberty to attend to its own private concerns with unremitting care; so that *self* naturally becomes the principal object of attention; and things
are

are deemed valuable, or the reverse, chiefly as they minister more or less directly to the wants of this new *idol*. On this account *money*, which in an advanced state of civil society, ministers directly to the wants of every individual, is universally prized as the highest good on earth ; and by consequence the means of accumulating *wealth*, become the chief occupation and principal study of mankind. In these circumstances the interest of one man frequently interferes with that of another, by which means the *social* affections are still farther obliged to give way to the *selfish*: but as the efforts of every individual to serve himself, would be retarded by an open discovery of these affections, it becomes his

his interest to conceal them, so that the most rancorous malevolence of heart is often concealed under the appearance of the warmest friendship; and it is in this state of society an undisputed maxim, that

Scavoire vivre est scavoire feindre.

SUCH are the necessary changes that are produced on the opinions and pursuits of men, by their advancement in knowledge, and improvement in the arts of government.

It would seem that societies, as well as individuals, have their youth, manhood, and old age; each period possessing a set of sentiments, affections, and passions, peculiar to itself,
in

in the one case, as well as the other; the passions peculiar to each of the stages in the progress of society, bearing a remarkable similarity to those belonging to the corresponding stages in the progress of human life.

THUS, in the infancy of society, as well as of man, youth, active and unquiet, emulous of glory, and regardless of danger, rushes precipitately forward from one extreme to another, and glories in great and daring acts of what it deems heroism without being anxiously solicitous about distinguishing nicely between what may be truly or falsely so called. Candid and unsuspicious, the heart glows with benevolent affections; and disinterested

generosity of sentiment is the distinguishing characteristic of this period.

BUT when societies begin to attain stability,—when manhood approaches, wisdom and experience begin to inspire more cautious circumspection.—The undistinguishing glow of ardour and benevolence then comes to be more judiciously circumscribed, and the mind selects with care objects upon which it may be properly exerted. Its exertions are more steady, but more confined. Those objects with which we are more nearly connected, come to claim our principal attention. Family,—Country,—are names that denote connections which rouse all the tender, all the
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the active faculties. No toil seems to be too great, if it tends to ensure their felicity, and secure their stability. *Self* is in some measure forgotten in attending to these dearly-interesting objects, and the mind still goes forward with a steady regulated ardour, accompanied by Hope, and entertained with the glowing prospects she successively displays to the pleased imagination.

BUT when, in consequence of the vigorous exertions of youth, and steady perseverance of manhood, many of those blessings have been obtained which seemed at first so highly desirable, the mind, for want of employment, begins to flag. Age

steals slowly on. The chilly blood scarce creeps along the veins. Honour and glory are now no longer capable of rousing the sympathetic affections. Family,—Friends,—convey to the mind no invigorating sensations. Feeble nature, in need of support from every hand, can spare no attention to others, and every art is tried to restore a taste for former enjoyments; but in vain. Plenty in vain displays her long-collected stores. Cloyed with superabundance, Fancy only longs for that which, when obtained, Nature loaths as nauseous; till at length, incapable of any real enjoyment, the mind sinks into a state of torpid indifference to all.

UNHAPPY

UNHAPPY the individual who thus survives himself! Unhappy the community which approaches to this state of decrepitude and weakness.

WHETHER or not Britain is yet arrived at this period of political decrepitude, will not, I hope, admit of a dispute. I believe she is yet at a considerable distance from it. But that she is already past the meridian of life; that her active struggles are now over; and that she is declining into that state of listless lassitude which proceeds from inaction, and leads to indifference, will not, I imagine, be denied. Is it not therefore vain to expect, that such vigorous exertions of public spirit should now
be

be made as were admired in former times? Is it not foolish to think of exciting in individuals desires so incompatible with the affections peculiarly appropriated to that stage to which we are advanced in the progress of civil society?

No one who shall read these pages, can be more sensible of the force of this objection, than the writer of the following sheets; and it was from a full conviction of its powerful influence, that he wished to confine his lucubrations to the narrow sphere for which they were originally intended. Whether he, or his friends, who have differed in opinion from him in this respect, have judged

judged rightly, a few years experience will discover.

IN the mean time, it might be urged against the objection, that although it is perhaps in vain to expect, that a regard for the public good should be capable of stimulating any considerable majority of the nation, to perform *actions* similar to those that have been common in former times, they may still be pleased to talk and speculate upon the subject. To such persons this performance may afford a fund at least of innocent amusement.

THERE is, says some one, a pleasure in madness, which only madmen know.

know. There are some kinds of sensations which have such irresistible power, as to whirl the mind forward with a wild delirium of ecstasy, into scenes so ineffably delightful, as are capable of excluding for a time all other ideas whatever; the recollection of which, like that of a pleasing dream that is past, continues to be always agreeable to the fancy. That heart is indeed callous in extreme, which does not look back with pleased complacency to those early scenes of youthful love, when the tender unsuspecting heart indulged without controul the sympathetic affections; and, lost in an elysium of ideal bliss, knew no other employment, save that of forming fairy plans that angels

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gels might be ambitious to execute. If novel-writers afford entertainment, chiefly by painting scenes that give room for mankind to indulge this tender propensity, why may not those who endeavour to recall other sensation of a pleasing kind, hope to meet with some degree of indulgence?

THERE is not perhaps any affection of the soul that bears more universal sway among vigorous youthful minds, than disinterested philanthropy, and universal benevolence to mankind. Many are the lessons necessary to be given, and severe the examples inculcating these, before the ingenuous mind can be brought to confine its benevolent exertions within proper

per bounds ; and it is not without the most poignant regret, and lingering delay, that it can be brought to acquiesce in the prudential admonitions of age and callous indifference. Nor is it possible for some persons ever so far to forget the delight that they enjoyed from the indulgence of these beneficent affections, as not to feel their minds glow with a sort of divine ardour, when a scene is opened, in which it appears that they may be, without imprudence, indulged. Such persons may, if they please, consider this book as a sort of patriotic novel, which may serve to amuse them, although the plans it suggests should never be realized, and may help to pass a few agreeable hours,

hours, by allowing them, without prejudice to their worldly affairs, to indulge for a short time those pleasing affections, from the exertion of which they have reaped more genuine delight than from all the other enjoyments of life. After they have dreamed away a few hours in the reveries which it will suggest, they may lay it on the shelf, and plunge once more into those tumultuous scenes in which their heart tells them they have no enjoyment.

Nor is it wrong to try to keep alive the seeds of these affections; nor will those *sublime geniuses*, who laugh in secret at men whose actions are really influenced by motives of
this

this kind, disapprove of the attempt. Like a principle of religion, a spirit of patriotism is an exceeding convenient thing to prevail among the lower orders of the people; and however much the *choice spirits* of the age may themselves dread the fetters that these would impose, and therefore disregard them; yet they will allow it is extremely convenient *for them* to have others in trammels, that they may be the more easily led about at pleasure. On these accounts my attempt ought to meet with the approbation of these *most sublime* philosophers.

To others, of less exalted sentiments, other arguments might be adduced,

adduced, better adapted to their more limited capacity, that should satisfy them, that an attempt to keep alive a spirit of disinterested patriotism deserves to meet with their approbation. Even the most selfish must, upon their own principles, approve of this attempt, if I can prove that it is compatible with the genuine spirit of pure *selfishness*; which I do as follows.

ALL mankind wish to attain happiness: nor is it possible for any creature endowed with life, to divest itself for one moment of this original bias impressed upon all animated nature. Man, single and alone, is a feeble helpless creature. He has neither

ther the strength of the elephant, nor the swiftness of the stag ; and in the little arts of cunning, to which he must have had recourse, he would perhaps have been exceeded by the fox or wolf. But, with the aid of his fellowmen, he has become the lord of the creation. The sturdy elephant is taught to bend at his command ; and all the creatures of the field are made to minister to his wants. It is from society, therefore, he derives that exalted pre-eminence he enjoys ; and to society he must fly for protection on all emergencies. Nor is a matter of so much importance to his preservation left to the discovery of his own sagacity, or to the fallacious decisions of reason alone ;

alone; but it is pointed out to him by original feelings, so strongly imprinted on the human mind, that no mode of education can totally repress, nor any fashion however predominant, nor any system of reasoning however plausible, can ever entirely eradicate. Hence it happens, that although, by the aid of human laws, a man may be so effectually secured from the fear of injury, as never to have occasion to *feel* his own natural weakness; although he may be thus prevented from being immediately sensible of the very great obligations he lies under to others, nor be capable of perceiving, in a clear enough manner, how much his own preservation and well-being depends upon the

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the prosperity and happiness of all the other members of the community to which he belongs; although he may in these circumstances be in danger of disregarding his fellow-subjects, and of pursuing those measures only which should promise to minister directly to his own single advantage, however prejudicial they might be to all around him; although he may thus be induced, in consequence of ignorance, and erroneous reasoning, to indulge the selfish instead of the social affections, which would have a direct tendency to destroy that very security on which he originally relied with such unsuspecting confidence, and which would render him an easy prey to any one who

who might chuse to attack him;—yet the voice of Nature is so irresistibly powerful as cannot be suppressed, and he finds it impossible to proceed in his little selfish plan. Happiness, the great object of his wishes, perpetually eludes his grasp; and he feels, that in the possession of *millions* no enjoyment affords unmixed delight, but the conscious recollection of past actions of justice and beneficence, or the inward wish to promote to the utmost of his power the general felicity of others.

He is thus forced, almost in spite of himself, to pursue those disinterested plans that are most essentially necessary for his own preservation: and

although he may be blinded for a time by the blandishments of pleasure, so as to wish for riches as the only good, or to fight for power as the most effectual means for obtaining happiness, he will be forced at length to own, that these are but unreal phantoms, whose possessions afford him no substantial delight. The ghosts of departed hours still haunt the imagination of man, and with them bring the recollection of past events, heightened by all the exaggerated colouring of an inflamed imagination. If, in obtaining unbounded treasures, the sacred rights of humanity have been abused; if millions of lives have been wantonly sacrificed in order to fill the coffers of one man;—is it surprising, that

that the recollection of these miserable scenes; which perpetually return accumulated degrees of horror after each short interval of criminal dissipation, should harrow up the soul, and embitter every enjoyment to such a degree, as to render life itself intolerable? Or need we be surpris'd, that the humble swain, whose hours roll on in innocence and peace, and whose pleas'd imagination at every leisure-hour brings back the recollection of past acts of tender beneficence, should spend with joy the live-long day, and at each returning morn pour forth his heart in grateful orisons to that beneficent being who hath bestowed upon him so many comforts in this life?

IF then happiness is the desire of every soul that lives, and if disinterested beneficence is the only possible means of attaining it, we must conclude, that the disinterested man, while he seems to forget himself, is most effectually ministering to his own wants ;—and that the selfish man, who thinks at once to attain the object of all his desires, is only busied in throwing difficulties in his own way, which retard his progress at every step, and effectually prevent him from ever obtaining it.

WEAK, however, is the voice of reason, when opposed by the allurements of pleasure. Desirable objects, when present or near, are represented

ed by a heated imagination, as so much more engaging than they really are, while those at a distance appear so faint, that, when put in competition, the one is grasped at with an irresistible eagerness, while reason in vain attempts to call off the attention to the other. There does not live one man, who has not had too often occasion to cry out in the striking words of the poet,

*Video meliora, proboque,
Deteriora sequor.*

WERE it not, therefore, for the voice of Nature, which cannot long be suppressed, man might be hurried into the most destructive measures for himself, in spite of that reason of
which

which he so often and so vainly boasts; and all those political institutions which he thinks so strongly mark his wisdom, would be infallibly destroyed by diseases that are derived from their own perfection. But while under the protection of these human laws he thinks himself secure; when his barns are full, and all his goods secured, and he says to his soul, "Thou hast much goods laid up
" for many years; take thine ease;
" eat, drink, and be merry;" and prepares to plunge into all the luxurious excess of criminal delights, this inward monitor becomes an eternally unwelcome intruder, and often tears him from his fancied pinnacle of power, and tumbles him headlong into the
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the irremediable gulph of misery and despair, to furnish an awful lesson to those around him of the impossibility of disregarding the genuine feelings of nature with impunity.

SUCH are the means that Heaven hath ordained for repairing the injuries that result from the most perfect political institutions of man; and were it not for the secret, though uninterrupted influence of the eternal laws of disinterested beneficence upon many individuals in every community, the revolutions to which nations are subjected would be much more frequent than they really are. It is not, therefore, a fault to endeavour to cherish these affections in the minds of the people.

SUCH

SUCH are the arguments that might be alledged in excuse of this publication, and such are the principal reasons that induce the author, in spite of the obloquy it may throw upon him, perfectly to agree with the poet, (for poets are not always the worst philosophers), in thinking that

Nè disastri d'un regno

Ciascuno à parte : e nel fedel vassallo

L'indifferenza è rea.

Metastasio, in Artaserse.

which, on account of the unfashionableness of the sentiment, he chuses to leave in the obscurity of the original.

THUS far had the author written with an intention to have made this
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an anonymous publication. But when he reflected, that in some places of his work he has had occasion to controvert the opinions of some living authors who have acknowledged their performances, he thought it had somewhat of a mean and disingenuous appearance to keep himself concealed: and although he shall never contend with any one for the sake of victory; yet to wipe off the most distant appearance of any thing unmanly, he immediately resolved to avow it. His chief reasons for having ever wished to remain concealed, were, to avoid drawing upon himself the effects of the ill-humour that may arise in the minds of such persons as may find themselves hurt by any of the

the observations that are contained in the following work, and to shun the idle tattle of *busy-bodies*, who are ever ready to disturb the repose of one who wishes to indulge, in a quiet retreat, the unenvied tranquillity which a silent mediocrity in all respects most effectually ensures.

To the *first* he would say, That he was induced to write, partly to amuse himself, and to pass in an agreeable manner a few leisure hours, which he found hang rather heavy upon his hands in his solitary retreat; partly to please a friend; but chiefly because he was not only better acquainted than most persons with almost all the most material facts on which the reasoning

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reasoning in the following pages is founded, but also because he was fully convinced of the very great importance of many of the particulars here treated of to very many individuals who are not capable, or willing, to judge of them without assistance; and that nothing could be farther from his intention than to give offence to any one. He has indeed on all occasions delivered his sentiments with that warmth and undisguised sincerity that was natural between intimate friends; nor has he, upon a revival, thought it necessary to soften his expressions so much as would perhaps have been unavoidable if they had been originally intended for the public: but on all occasions he has confined

finer his observations to the objects themselves, and has never made allusions to any person who may have been accidentally connected with these objects. He was even studious to avoid, as far as was possible, connecting in his own mind any persons with the facts on which he has had occasion to animadvert; so that for the most part he really does not know who are the persons that are or are not connected with the several measures he either approves of or condemns. But if he did know these particulars, he would deceive himself if he could be induced to bestow any applause upon a measure that his reason condemned, if it should be supported by the best friend he ever had in the world, nor
bestow

bestow the smallest censure upon another measure that seemed to him praise-worthy, although it had been promoted by the man he most detested. He knows no man that is free of faults; and he hopes never to meet with one who is altogether destitute of merit. Why then may not the accidental failings of good men be admitted, without derogating from their virtues? The best are ever most ready to allow of this. And why should the bad be deprived of the small tribute of applause that they may have justly merited? A man of a liberal turn of mind, is happy at having it in his power to do justice to the last, because it helps to give him a more pleasing idea of the natural rectitude

rectitude of the human mind. He has no reluctance at correcting the errors of the first, because he knows it cannot derogate from their justly acquired fame, and will merit and obtain their thanks.

HE, therefore, that delivers his sentiments on interesting points with freedom, void of malevolence, cannot give offence to dignified minds; and he who has not vigour of mind to dare to do so on all occasions, never ought to handle any political subject. For these reasons, without either fear or favour, without the knowledge of any party, or the smallest desire to please any one set of men in preference to another, the Author has gone right forward, and

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and has praised or blamed whatever he thought deserving of it; nor is afraid that he will meet with the censure of the worthy part of mankind, even where they may find it necessary to correct his errors.—But if he thought there was one sentiment in the whole of this performance that was dictated by a spirit of malevolence, he would sooner submit to have the hand which writ it chopped off, than suffer such a passage to go to the press and spread abroad his own shame throughout the world.

To the class of idle cavillers he would apply a saying of a man, who, like himself, had stepped a little out of the line to which his neighbours thought

thought he ought invariably to have confined himself; who, sporting with that idle curiosity which is always excited on these occasions, hung out to their view, in a conspicuous place, the three following sentences successively one day after another:

They say,

What do they say?

Let them say.

MONKSHILL, March 18.

1777.

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ON THE
MEANS OF EXCITING A SPIRIT OF
NATIONAL INDUSTRY;
CHIEFLY INTENDED TO PROMOTE THE
AGRICULTURE, COMMERCE,
MANUFACTURES, AND FISHERIES,
OF
SCOTLAND.

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ON

NATIONAL INDUSTRY.

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OBSERVATIONS

ON

NATIONAL INDUSTRY.

LETTER FIRST.

TO MR. ***** LONDON.

DEAR SIR,

HAVING-been from home for some time past, on a tour through the North Highlands, I did not receive your very kind letter of the 20th of July, till two days ago; which is the reason I did not write you sooner.

I VERY much regret that the situation of your family did not permit you to prosecute your intended



intended jaunt farther than Edinburgh; as you would have received fuller information on the spot, as to those particulars you are anxious to be informed of, than you can hope to obtain at second hand. You would likewise have seen a country so totally different from any thing you have ever beheld, and a people so unlike to those with whom you have hitherto conversed, in manners and customs, as could not fail to give rise to many interesting reflections in a mind of such an enlarged philosophical cast as yours is.

BUT since it is impossible for any man to obtain every thing that might be agreeable to him, it behoves him not to repine at the want of what may be placed beyond his reach; but rather, like you, when prevented from obtaining knowledge in the best way in which it can be communicated, strive to obtain it by such means as still are within reach; that thus he may never remain altogether stationary, but still be advancing a little, although it may be more slowly than could be wished for.

I SHALL, with pleasure, not only communicate to you all that I know relating to the present state of the Highlands of Scotland, and the

the causes of the emigrations from thence that have of late made so much noise in the world, about which you seem to be so very desirous to be informed; but as those particular national distresses that press heavily at one time may, by some sudden and unexpected event, be totally removed, while other inconveniencies arise that may be equally destructive to the community, I should think that I had but ill performed the task you require, should I confine my observations to a particular grievance, that may perhaps have disappeared before the ink shall be dry with which I write this letter. For this reason, although I shall not overlook the circumstance that seems to have particularly engaged your attention, I shall endeavour so to explain it, as to give you a full view of those radical political defects, which have not only given rise to this evil, but from which other evils will continue to arise after the very remembrance of this particular one shall have totally passed away; and shall point out such a plan of conduct as seems necessary to be pursued by those who mean effectually to ward off similar distresses from their fellow-creatures for the future.

You

You say, you could not help remarking, that there was a very manifest difference between the look and appearance of the ordinary people in that part of Scotland through which you passed, and those of the same rank in England. Their countenances were not so open,—their gait and manner less hardy and unconcerned; you perceived more marks of politeness, and complaisance, but along with that, you thought you saw more care and anxiety of mind; so that you could not help feeling a kind of uneasiness at drawing the parallel between them that constantly obtruded itself upon your imagination.

HAD you proceeded farther in your intended tour, you would have had much greater room for making this remark. For in many parts of Scotland, the lower class of people are so abject in their behaviour, so mean in their apparel, so dejected and melancholy in appearance, and so thin and emaciated in their looks, as cannot fail to excite very uneasy sensations in the mind of any one who has not been accustomed from his infancy to see them. This is the only disagreeable circumstance that you would probably have met with, had you proceeded in your intended circuit: but it would

would probably have made such an impression on you, as would have greatly diminished the pleasure you might have received from other objects.

It is, perhaps, a misfortune, that those who have been accustomed from their infancy with this appearance of the poor people, do not perceive in it such a strong indication of wretchedness and misery, as it conveys to the mind of one who beholds it for the first time: for if it did so, they would be prompted to search out the cause of it, that they might thus be able to remove the effect. But so great is the force of custom, that it can render the most disagreeable objects indifferent, and those that naturally excite terror, and affright, altogether uninteresting. Long habit brings the soldier to walk unconcerned along the parapet, while the balls are whistling 'round his head, and his companions falling on every side; and those who are endowed with the most tender sensibility of mind, after they have lived some years in the West Indies, can with unconcern see their fellow-creatures treated with such severity, as would make even a brutish European shudder with horror. Is it therefore a wonder, that the slighter appearances of distress among ourselves should

should make but a faint impression on those to whom these appearances have been familiar from their earliest infancy!

It was not, you know, my fortune to be born in the part of the country where I now reside; nor was I early accustomed with such strong appearances of misery as have since been more familiar to me; so that at first the appearance of it struck me strongly, and affected me so much as to make me be very anxious, if possible, to discover the cause from whence it proceeded. And as my situation in life is such as necessarily leads me to be more intimately acquainted with the lower ranks of people, than usually falls to the lot of those who have had a liberal education, I have been thus enabled to become better acquainted than most people of that class,—with the internal œconomy of their families, and to perceive the numberless nameless hardships they have to struggle with; which so powerfully tend to repress every active exertion of the mind, and to produce that sorrowful melancholy appearance for which they are so remarkable. But as people in high life have no access to know these circumstances, or to feel with what force a little, a very little rub, affects a mind already weakened by habitual disappoint-

disappointments, it is not surprising if they should often find occasion for blame, where I would only be disposed to pity; and thus rather accumulate an additional load on the afflicted, instead of moderating the burden with which they are oppressed.

IN these circumstances, without pretending to a greater share of humanity than others, I have been perhaps more affected with a sense of the hardships of their lot, than many of those with whom I have had occasion to converse, and have embraced every opportunity that offered, of undeceiving men of property and influence with regard to this particular;—a thorough conviction of which would not tend less to their own advantage in the main, than to the prosperity and happiness of those whom it would affect in the first instance.

You see, my dear Sir, that your friend is possessed of a strong tendency to *Quixotism*: And although this country is perhaps as unfriendly to this disposition as most places, and the present æra as unfavourable for patriotism as any other; yet I have been strongly tempted on several occasions to endeavour to extend my admonitions a little beyond the bounds of the
private

private sphere of my acquaintance. But being sensible, that a man who pretends to be actuated by any other principle than a regard to his own interest, is considered by all either as a knave or a fool, I have had the caution hitherto to keep myself from being exposed publicly in either of these points of view; although, from behind the curtain, I have ventured to publish a few essays on what I imagined interesting subjects; among which are several letters, under the signature of *Agricola*, upon the very subject of the queries contained in your letter, that made their appearance about a twelve-month ago, in a miscellaneous pamphlet, published at Edinburgh, called the *Weekly Magazine*; which have been received, I am told, very favourably by the public.

I MIGHT refer you to these letters for my opinion relating to the present state of the Highlands of Scotland; but as they were hastily written, and are too much confined to the particular subject that gave rise to them; for the reasons already given I shall make my observations to you more general, so as to be applicable, not to one particular district of the country only, but to every corner where man may inhabit, or beasts be made to live; and not to those transient evils that

that may serve to amuse the speculative at a particular period, but to those radical defects, that, if not attended to, will continue to oppress mankind by incessant varying ills through all successive ages.

THE discussion will be long; but if the subject be as interesting to you as it is to me, it will not appear tiresome: nor am I afraid that *you* will soon become weary of a disquisition that aims at promoting the happiness of thousands who are now struggling with want and groaning under the load of accumulated afflictions. It will perhaps be still more entertaining to you, that I shall have occasion to make observations on *your own* manufactures, particularly the woollen manufacture of England; which will be more intimately connected with the question here agitated than you may perhaps at present imagine.

As it is not to be supposed, that one who has been so much engaged in other pursuits as you have been, can have had time to enter very deeply into the minute detail of the interesting particulars that may affect the prosperity of agriculture, trade and manufactures, I flatter myself that many of the observations
that

that may occur will at least have the merit of *novelty* to you. And indeed these subjects in pamphlets, and other performances of that nature, that are daily issuing from the press, are in general so imperfectly treated, as tends greatly to mislead the judgment of such as are obliged to content themselves with the ideas that these afford.

I SHALL write to you with the freedom of a friend, and shall hope to be favoured with your remarks upon the several subjects treated of with your usual candour and sincerity. For although you are no professed adept in these matters; yet the observations of a man of sense, on any subject that is not intended to be treated of in a mysterious way, as Aristotle of old boasted to his Royal Pupil he had done, are always of importance;—frequently more so than those of such as are engaged in the practice of the profession treated of; seeing these are very often biased by their favour for their own calling, which prevents them from forming a proper idea of the importance of that when considered as a part of one political whole.

In compliance with your request, I shall begin with an account of the present state of the
Highlands

Highlands of Scotland; from which I shall proceed to matters of more general importance.

It is a trite observation, but a just one, That man is not more naturally prone to attribute every unsuccessful event that befalls himself, to the influence of fortune, and unlucky chance, than he is to impute all the misfortunes of others to their own mismanagement; and to attribute nothing to that concurrence of fortuitous circumstances which frequently confounds the best-concerted schemes that can be formed by the wisdom of man. On this account, unhappy sufferers are too often reviled, and accused of faults of which they were not guilty, instead of meeting with that lenient sympathy which their situation ought naturally to excite.

NEVER, perhaps, could this observation have been more exactly verified, than at present with regard to our distressed brethren of the Highlands of Scotland; who, although involved in troubles that in a great measure take their rise from causes that few individuals among them could either have foreseen, or prevented if they had been apprehended, are, nevertheless, accused and reviled, as if they themselves were the
sole

sole and immediate procurers of all those misfortunes under which they labour.

AND as every one is ready to shift the burden from himself, and put it upon those who may apparently be accused as accessories, the poor are unanimously disposed to attribute all their distresses to the rapacity of those of higher station; while these, with equal virulence, and perhaps justice, retort the charge upon the indolent and helpless poor. Thus equally irritated against one another, they rack their invention to discover still more and more causes of complaint in those against whom they are so highly offended.

AND as in all cases of this sort there will never be wanting many persons, who, although not materially interested themselves, eagerly take a side, and with inordinate warmth and virulence greatly calumniate the opposite party, these serve only to widen the breach that is already but too large, and to foment those dissensions that tend to divert the attention of all parties from the real and primary cause of all their misfortunes; which effectually prevents them from concurring together in concerting such plans as might in some measure alleviate their present

sent distresses, and help to ward off those greater evils that seem to threaten them. It was with a view in some measure to effectuate this desirable end, that I was first induced to take up the pen on this subject, as I have already told you; hoping, that if I should succeed in proving, that a great part of the present distress of the Highlands arises from causes in which the present inhabitants, whether rich or poor, have but little share, it might serve in some measure to alleviate the virulence of party-dispute among them; and hoping also, that when they came to view each other as equal sufferers in one common calamity, each would be disposed to make the load as light to the other as possible, instead of mutually adding to it, as their present animosities, and mutual jealousy of one another, has a most powerful tendency to do.

It will be readily allowed, that every alteration that suddenly takes place in the old established customs of a country, can hardly fail to produce some sensible inconveniencies in it, unless these are guarded against with the most cautious circumspection. But in what country have we ever known a greater change produced, in so short a time in its internal polity, or less care taken to guard against the inconveniencies

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that could hardly fail to arise from thence, than in the Highlands of Scotland?

ACCUSTOMED to an almost independent sovereignty, the chieftains, till of late, lived each in the midst of his own people, and shared with them the produce that his demesnes afforded. Ignorant of the luxuries that commerce had introduced into the other parts of the island, they lived contented with their own homely fare; nor seemed to have a wish, but to preserve that independency that had been transmitted to them by their forefathers, and to protect their family (for so they considered all their clan) from the depredations of others. This naturally produced a kind of warmth and attachment between the vassal and his chief, that is almost entirely unknown in every other stage in the progress of civil society, and is totally incompatible with that spirit of universal liberty that happily now takes place in the greatest part of this island. But can we imagine, that a principle, in which the chief glory of man was supposed to consist, and whose active exertions was thought to constitute his highest felicity, could be totally eradicated at once, by any means that could possibly be devised?—or that the minds of many, unhinged by the attempt, should

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should not be thrown into a state of disorder that must be attended with the most serious and most disagreeable consequences?

By the unhappy disturbances that broke forth in this part of the island within the present century, many of their principal chieftains have been banished from their native homes. And as the absence of him whom they considered as their only rightful judge and lawgiver, relaxed the arm of justice for a time, a particular species of anarchy ensued, which gave rise to crimes, unheard of till then among themselves, and unknown in other parts of the world. When attempts were made to bring transgressors before another tribunal, the legality of which they did not acknowledge, and to punish them severely, for *crimes* which they scarcely deemed *trespasses*, they were often screened by those of their own tribe; while others, who committed trespasses against the local laws or customs of their clan, were equally protected by the civil power from undergoing the punishment they dreaded from their own superiors. In this manner the minds of the people became debauched. From the hope of impunity crimes increased; and in the contest for establishing the civil power, the temper of the inhabitants

of these countries became soured, and their disposition unsettled, so as to prevent them from steadily pursuing any occupation that might furnish them with the comfortable means of subsistence.

AND as the government, for wise reasons, found it necessary to deprive the chieftains of that power and authority which they had formerly exercised over their vassals; many of these, who still remained in the country, finding their authority curtailed, and becoming gradually acquainted with the pleasures of a civilized life, grew less and less fond of that kind of life they had formerly been accustomed to, and came at last to relinquish it entirely. And having in time been led to follow other employments, that necessarily carried them from home, they were obliged to substitute others in their stead for the management of their estates; which laid the foundation of more uneasiness to their dependents.

FOR as mankind usually submit with reluctance to any delegated authority, these high-minded vassals, who had been accustomed to look upon their chieftain alone as their superior, could hardly bring their minds to submit to the idea of being subjected to the controul of

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one whom they had hitherto viewed only as one of themselves, and whom they considered as intitled in equity to no superiority over them. His actions therefore came to be scanned with the most rigid criticism. The worst construction was put upon every thing he did or said; and every disagreeable change that took place with regard to them was attributed entirely to him. Mutual jealousies naturally produced asperities of conduct on both sides; and while the minds of the vassals, thus soured to the highest degree, compared their past with their present situation, they sighed for the return of their natural lord; imagining, that with him would return those golden days of happiness and tranquillity that their fancy presented to them in such lively colours.

BUT when these civilized chieftains chanced to return to their native seats, who can describe the disappointment that their vassals often met with? For having, by their intercourse with strangers, acquired in time habits quite different from their fore-fathers, and modes of thinking in every respect dissimilar to them, their whole behaviour and turn of conversation, was so totally different from what their dependents had fondly expected, as tended greatly to increase their chagrin, and served in many cases to

to turn their prejudices from the factor to the proprietor himself.

AND as a man who has been accustomed to polished society, can find little to approve of, and much to blame, in the way of life followed by an uncivilized people; and as persons in the circumstances here supposed are not always so much upon their guard against discovering a contemptuous disregard for the persons or opinions of their inferiors, as *real* politeness might require, or extensive humanity exact,—they often, without a cause, gave deep wounds to the self-love of those whose misfortunes were their greatest crime. In this manner their affections became gradually alienated from one another; so that, instead of remaining mutual friends and protectors of each other, the chieftains and their vassals now view each other as declared foes; which heightens every evil, and makes every accidental distress come with redoubled vigour from what it would otherwise have done.

BUT although this must be exceedingly disagreeable, it is not the worst consequence that has accrued from this revolution in the country. For, as the proprietor formerly received his rents in

in kind, and spent his revenues among his vassals, with that liberal hospitality that in the most powerful manner tends to conciliate the good-will of those who share of it, little was carried away from amongst them, and they all partook of the produce of their own fields, which with difficulty was then sufficient to sustain them. But now these rents, however small, being constantly carried out of the country, help to drain it; not of its money, (for money they have none, except what is brought to them as the price of their cattle, almost the only produce of their fields), but of their provisions, that used to be applied towards the sustenance of the inhabitants. And as these inhabitants, now freed from the constant feuds and petty wars that used to carry off numbers of them, are increasing, while the quantity of provisions that used to sustain them is thus diminished, no wonder that they feel the pinching hand of want, and all those grievous ills that are its constant attendants, and take such methods to evade this sore distress as prudence or despair may first suggest.

It seems to be a very prevailing opinion in this country, that all the distresses so justly complained of by the poor Highlanders, have been occasioned

occasioned by the merciless rapacity and avarice of the landholders. And I make no doubt but the injudicious severity of some of these may have hastened a little that calamity, which was still creeping forward by imperceptible degrees, and must inevitably have been felt sooner or later, without any blame on their part: for as the country which these poor people inhabit, is in a great measure incapable of being improved by culture, and as the inhabitants are unacquainted with the mode of doing it, if it were, it is plain, that if their numbers be increasing, while the quantity of food for sustaining them remains nearly the same, even supposing nothing at all were exacted by the proprietor, the time must quickly approach when famine will come among them of itself. It does not therefore appear, that the gentlemen are so much to blame for continuing to exact their rents, (which must be allowed by every one to be justly their due), or for wishing, that these should bear some sort of proportion to the general decrease in the value of money in every part of the island, as for not having in time endeavoured by every gentle incitement that a prudent foresight could discover, to lead the poor people into such a train, as without directly thwarting their deep-rooted prejudices, might have enabled them to provide for their own subsistence, and

and to pay, without distressing themselves, that acknowledgment which is so justly due to their superiors.

NEITHER ought the *gentlemen*, on the other hand, too harshly to complain of the indolence, and other bad qualities, they think they perceive in these poor people, or look for exertions from persons in their circumstances similar to what may be expected from others, whose minds have been accustomed to that animating fervour which a spirit of independence most naturally inspires, and whose bodies, from their earliest infancy, have been braced with that unabating vigour which active industry alone can produce. Habits, we all know, can only be overcome by slow and almost imperceptible degrees; and even prejudices ought to be respected. We ought not therefore to expect, that any particular operation we wish to have performed can be done by these men, although we know that it could be executed by others not naturally endowed with greater powers than themselves; or accuse them of obstinacy, or wilful perverseness, if they fail in the execution of it: but rather, with a calm benevolence of mind consider what it is that we require of them, and, with lenient circumspection, weigh well the means they have had to acquire

acquire the power of performing it with facility; always making due allowances for the obstructions that deep-rooted prejudices may have thrown in their way. We would surely laugh at the absurdity of that man who should require any of his servants to make a watch, and who should be offended at him if he could not execute it with neatness or accuracy; "because," says he, this machine is the work of a man who is endowed with no superior talents, and why should not you be able to perform what can so easily be done by another?"—Yet we are seldom offended at the equal absurdity of that man who expects that his servants, who are totally unacquainted with some other kind of manual labour that he may have seen practised by common rustics in some other part of the country, should perform it with ease, and who inveigh with virulence against them accusing them of stupidity or obstinacy, because they cannot execute with accuracy and facility some of those rural labours that long habit has rendered easy and familiar to other persons, who are perhaps more dull of comprehension, and not less unreasonably attached to their modes of practice than they are.

COULD persons of all ranks be induced thus coolly to correct some of their own foibles, and
make

make candid allowances for the almost unavoidable prejudices of others around them, it is not to be doubted but it would greatly alleviate many of their distresses, and totally remove a great deal of that unhappiness that at present embitters their life. Every good man must be sensible, that Heaven has endowed all ranks of people with talents nearly equal; and that these talents are often buried under a load of ignorance among the lower classes of people, so as never to appear. It therefore behoves those who have had the benefit of a liberal education, instead of imitating the vulgar in their illiberal prejudices, and adding insult and contumely to the other misfortunes of the poor, rather to commiserate their hard lot in life, and while they have a grateful sense of their own superior good fortune, endeavour to smooth those difficulties that lie in the way of the others, and, with a merciful forbearance, not be irritated at their absurdities or errors, but with kindness and lenity gently lead them from error to truth—from prejudice to right reason, and from misery to happiness. Thus would they show themselves truly worthy of that eminent station they enjoy, and prove in the most unequivocal manner that they are indeed exalted above the vulgar.

I am, &c.

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THE HISTORY OF THE

REIGN OF

CHARLES THE FIRST

BY

JOHN BURNET

OF THE UNIVERSITY OF OXFORD

IN TWO VOLUMES

LONDON

Printed by J. Sturges, in Strand

1724

Price 1s. 6d.

By the Author

At the Sign of the Gun

in Pall Mall

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OBSERVATIONS

ON

NATIONAL INDUSTRY.

LETTER SECOND.

C O N T E N T S.

The introducing of manufactures into Scotland, particularly the Highlands, the only probable means of rendering the people easy in their circumstances.—
Difficulties in establishing a manufacture there that works up foreign materials—exemplified in that of linen.—Other inconveniencies attending manufactures that depend on foreign materials—exemplified in the woollen manufactures of Venice—and the Netherlands.—
Other inconveniencies that arise from the same cause—exemplified in the present state of Aberdeenshire.—
Those manufactures are most beneficial that promote the progress of agriculture by drawing from the farmer the materials on which they depend—exemplified in the state of Aberdeenshire in the beginning of this century.—Individuals may reap profit by a manufacture or trade that is destructive to the community—necessary consequences that flow from thence.—
Some manufactures that are supplied by foreign materials may, however, be of public benefit—exemplified in the silk-manufacture of England, the manufacture of ropes from hemp, and in the iron and steel manufactures.

OBSERVATIONS
ON
NATIONAL INDUSTRY.

LETTER SECOND.

TO MR. *** LONDON.**

DEAR SIR,

August 25, 1775.

I HOPE from what I said in my last, you will be convinced, that as the Highlands of Scotland (and the same may be said of a very large proportion of Scotland in general) are altogether incapable of any high degree of culture, it must necessarily follow, that a considerable increased number of inhabitants cannot be supported

ported there, nor any increase of revenue be drawn from thence, unless some method be devised for bringing money from other quarters into that country, with which the necessaries of life may be purchased. This can only be effected either by mines, manufactures or fishings.

OF these three, the two last are the most universally beneficial to the people; particularly manufactures, the influence of which might be easily extended to almost every individual in the country. The most necessary study, therefore, of those who wish to improve that country, and render the inhabitants independent, and comfortable in their circumstances, ought to be, to discover what kind of manufacture could be most easily and quietly established among them, and then take every method that can be devised for promoting that manufacture.

It is an undertaking of some difficulty to establish a new manufacture of any sort in any country, as it is long before the inhabitants can be brought to perform the several operations with that dexterity and ease that is necessary for bringing it to perfection. But in a populous district, where the inhabitants are crowded together, so as to be more immediately under the
inspec-

inspection of those who may be brought to instruct them, these inconveniencies will be far less sensibly felt, than in a region that is more thinly peopled, where they can hardly be ever brought together in any considerable number to receive instruction.

THIS inconvenience must always be in some measure felt; but the difficulty will be greatly increased, if the crude materials upon which the manufacturer is to operate, be not the produce of the country itself, but brought from a distance at a considerable expence. For no master-manufacturer would willingly entrust raw materials, of considerable value, with inexperienced operators at a great distance from himself; and he cannot here, as in a more populous district, give only a little at a time, so as to be no very great loser if it should not be altogether well done; but is under the necessity of giving out a good deal at once, otherwise the expence of carrying away the raw materials, and bringing back the manufactured goods, would become too high for him to be able to support.

ON this account master-manufacturers are discouraged from settling in these lonely regions;

and the inhabitants, even if they were willing to be instructed, are in a great measure deprived of the means of attaining the necessary degree of knowledge in these new arts.

THIS very circumstance must have always operated as a powerful bar to the establishment of the linen manufacture in the Highlands of Scotland; which we all know has been attempted with much keenness, and little success, for many years past. And it must always continue to be a powerful check upon every manufacture that is not employed on working up some of the native products of the country.

BUT if the materials were originally the produce of the country, the case would be widely different. For in that case the inhabitants could, at an inconsiderable expence, make small essays of their skill in manufacturing them. And as they would be always certain of receiving from the merchant a price for these manufactures proportioned to their intrinsic value, they would be encouraged to go on in their attempts, and to exert their utmost abilities to make their goods still more valuable than at first, so as to arrive imperceptibly at as great a perfection

perfection in these manufactures as the nature of their materials would admit of.

BUT this is only one of the many important advantages that result to a country when it is employed in manufacturing its own native products, in comparison of what it would reap by carrying on the same sort of manufacture were the crude materials imported from abroad.

FOR when the manufacturer depends upon any foreign state for the materials upon which he is to work, he is in a great measure in the power of that foreign state; which upon any cause of disgust, by stopping the exportation of these materials, may lay the artists entirely idle, and thus reduce them to beggary and ruin; to the endangering the internal peace and happiness of the whole community. Those who want to see the influence that this must have upon the councils of a nation, may get ample satisfaction by glancing over the history of the Netherlands while under the government of the Dukes of Burgundy, when their woollen manufacture was at its greatest height; as they will plainly perceive that Britain, which was then far inferior to that country in power or riches, kept it in continual awe; as it depended on

this country for a great part of the wool that kept its manufacturers employed.

BUT, independent of this circumstance, it must always happen, that in proportion to the degree that a manufacture in these circumstances flourishes, the demand for the raw materials will increase; and as the demand increases, the venders, perceiving the necessity that the manufacturers are under of obtaining them, will certainly enhance the price; as has plainly been the case of late with regard to our own linen manufacture; the Dutch having gradually raised the price of their flax as our demand for it increased, so that it is now about a hundred per cent. dearer than it was twenty or thirty years ago, when that manufacture was but in its infancy.

BUT even if this policy should not be practised, where the materials are at all bulky, the expence of freight, commission, duties, carriage, and other necessary charges that must attend the bringing these materials from a distance, become so high as to put it out of the power of the distant manufacturers to bear a competition in foreign markets with those who may procure the raw materials nearer home, and at
a much

a much lower rate. So that the success of any manufacture in these circumstances depends entirely on the stupidity or indolence of the nation which produces the materials : A very precarious footing for the happiness and prosperity of a whole people.

ACCORDINGLY we find that Venice, and the other Italian states, which, after her example, first began to perceive the benefits of industry and commerce, were enabled to carry on the woollen manufacture with great profit so long as the rest of Europe remained ignorant and uncivilized. But as soon as they began to open their eyes, and to manufacture their own materials, the Italian manufactures began to decline, and are now dwindled into little consideration in comparison of their former splendor.

It was the Flemings who first perceived the advantage that their situation gave them over the Italians for the trade of the northern parts of Europe, and so became their rivals; who, although without wool of their own, found themselves enabled, by their nearness to those countries that produced it in abundance, to beat the Italians out of their former markets. But when England began to prosecute her woollen manufacture

facture with spirit, the Flemings themselves were not able to bear a competition with her, and thus they gradually lost that manufacture for which they were once so universally renowned.

THAT this is the real cause of the fall of the woollen manufacture in the Netherlands, and not the oppression they suffered under the Spanish yoke, as is too generally imagined, is sufficiently plain from the revival of the linen manufacture there; which, by consuming flax, the native produce of the country, has been enabled to rear up its head again, and bear a competition with every other country in Europe, while the woollen manufacture sunk to rise no more.

THESE are inconveniencies that must in all cases attend such manufactures as depend upon foreigners for the rude materials: but in some particular cases there are other evils that attend it of a still more serious nature than those already enumerated.

If the manufacture is of such a nature as to admit of being carried on in separate detached houses in the country, and may be practised by

by any single person independent of others, it must invariably happen, that the whole of the money that is paid for the working up these foreign materials flows directly into the hands of the lower ranks of people, often into those of young women and children; who becoming giddy and vain, usually lay out the greatest part of the money that is thus gained, in buying fine cloaths, and other gaudy gewgaws that catch their idle fancies. And as these are almost always the produce of other countries, the greatest part of this money flows out of the country again, by innumerable channels, almost as quickly as it arrives. So that the benefit that results to the community is in this case far from being so considerable as a superficial observer would at first sight imagine it would be.

WERE this, however, the greatest inconvenience, it might still be allowed of as evidently beneficial to the state; but there are other consequences that necessarily attend manufactures of this sort, that render it in some measure doubtful if they may not, in some cases, be rather hurtful than beneficial to a country.

FOR as the money in this instance flows directly out of the country, without including the
farmer

farmer in the line of its circulation, *he* can reap no obvious benefit from the manufacture. And as the lower ranks of people then get more money than formerly, and affect a much greater degree of finery than before, the farmer will naturally wish to vie with these, and endeavour to preserve the same importance among them as formerly; so that *he* also will necessarily be induced to affect more finery and extravagance than before. And as he has no increased revenue to support this, he must of necessity become poorer, and more straitened in his circumstances, than formerly: A misfortune that can never be too much guarded against in a well-ordered state.—But this is not his greatest misfortune.

As the lower classes of people, in these circumstances, find they can earn money by a kind of labour that is less severe than the operations of agriculture, they naturally desert that mode of living, and apply to the other; so that the farmer in a short time finds himself at a loss for servants to carry on his necessary operations. He is therefore compelled to advance their wages considerably; which is one other cause of his becoming poorer and more miserable still. And as he thus declines in his circumstances, his servants

vants become more insolent and less active, which quickly tend to hurry him into the most abject poverty and despair.

STILL, however, one way, and only one, remains, by which he may for a time keep himself from sinking into absolute ruin, which he is, on this account, compelled to adopt. He must try to share some of the profits of the manufactures with those who earn the money for them. And as all mankind are fond of a sort of independent settlement, where they can remain in some measure their own masters, he lets to these lower kind of people a small part of his farm, at a considerably advanced rent; which they are induced to accept of, in the hopes of being able to pay it in some measure by the profits that they obtain by the manufacture. This rent they are perhaps enabled with difficulty to pay so long as the manufacture continues to flourish; but as they are incapable of improving the soil, and have their hearts totally alienated from the laborious drudgery that this would require, the first check that the manufacture meets with, fails not to involve them in the most poignant misery and distress.

In this state things will remain for some time, and the original tacksman be thus enabled to
live

live perhaps nearly as well as he did formerly, although at the expence of a total stagnation of all sorts of rural improvements. But when his lease falls, the proprietor, or his factor, (steward), finding that his *subtenants* have paid almost the whole of his rent, chuses to take these small tenants immediately under his own management; and by dividing what remained in the possession of the original tacksmen into such small parts as he can let to these poor people, he frequently finds himself enabled thus greatly to advance his rents; which he is naturally enough disposed to look upon as a real and essential improvement of the country.

IN this manner it necessarily happens, that the whole order of rich and substantial tenants is totally annihilated, and all the country becomes parceled out into small and trifling possessions, which do not deserve the appellation of farms.—Some speculative theorists will likewise imagine, that this is another real and essential improvement of the country.

BUT mark, I beseech ye, what are the natural consequences that result from this arrangement.

IN the first place, it necessarily follows, that as each of these small tenants is poor, and has
too

too little ground to be capable of maintaining a sufficient stock of beasts to labour it properly, the ground is less perfectly ploughed than formerly, so that it produces less abundant crops than it always used to do.

A SECOND consequence that in some measure results from the first is, that by producing less abundant crops, the country is not capable of maintaining during the winter so many beasts as formerly; so that less dung, for again recruiting the exhausted soil, is made than used to be; which has a direct tendency to make the crops still more scanty than usual, and thus in a two-fold manner hurts the interests of the community.

A THIRD consequence that in some measure results from this arrangement is, that the small tenants, finding it impossible in many cases to consume the produce of their possessions by that kind of live stock that would be most advantageous to them, because of the expence of keeping servants to look after such a variety of different kinds of stock; these kinds of animals must be entirely abandoned as unprofitable, and the possessor of the ground must lose all the benefits that formerly were drawn from them.

THUS,

Thus, supposing the original farm could have maintained, along with other live stock, a flock of two hundred sheep, the profits arising from these would have been sufficient to defray the expence of a shepherd to attend them; when this farm comes to be divided into ten or twelve small lots, each of these lots could only maintain fifteen or twenty sheep, which could not on any account defray the expence of a keeper; so that the little farmer is on this account obliged to renounce his sheep entirely, and give up all the profits that attended them. And as these sheep produced a considerable quantity of valuable dung, it tended much to meliorate the soil, and make the farm yield every year more luxuriant crops than it is possible for any art to make it produce without this powerful assistant.

A FOURTH consequence, which likewise takes its rise from the former, is, that as many baneful plants that would have been cropped by the sheep, are now suffered to run to seed, and establish themselves firmly in the soil, which cannot be ploughed up with profit, on account of the want of manures, arising from the causes above specified, many fields are necessarily allowed to run wild, and become covered with
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heath and other useless weeds, which were, or would have been, good corn or pasture fields, under a better or more skilful management.

Thus it appears sufficiently obvious, that in consequence of this unskilful arrangement, almost every circumstance tends to make the soil gradually produce less and less than before, and therefore keeps the possessors of it poor and miserable. And although they may be able to struggle for some time against these accumulated evils; yet as they gradually come to press more and more heavily, the poor people in time become nerveless and dispirited to a degree that is scarce to be conceived. Not a stone is by them removed from a field, should it be ever such an impediment to every rural operation;—not a drain is opened to carry off the superfluous moisture, should that water be ever so pernicious to the soil;—not an ounce of any sort of manure is purchased,—not an inch of ground inclosed; and every sort of improvement is entirely at a stand wherever this mistaken policy has prevailed.

And what adds still more to the distress of the poor dejected persons called *farmers*, in these circumstances, is, that as their children are soon
able

able to earn something for themselves, they in a short time flee from the sorrowful abode of their parents, and desert them in their old age, leaving them to struggle the best way they can with poverty and distress; while these giddy young people make haste to get a family and farm before they have any stock, and quickly experience the same misery in their own house that they could so ill put up with in that of their parents.

SUCH, my dear Sir, is the natural consequences of introducing a manufacture that admits of being carried on by separate and detached persons in the country, when it is employed in working up materials that are not produced in that country. The account is so melancholy, and the conclusions that must be drawn from it are so different from the ideas that we are usually taught to entertain, that I shall not be much surpris'd if you look upon it at first rather as a fancy-piece, than as an exact picture drawn from a subject that actually exists at present. — In this respect, however, you will be mistaken: for I can assure you, in sober sadness, that the county of Aberdeen in Scotland is precisely in the state above described at this very moment: A county as renowned for its flourishing

rishing manufactures, as for the great rise of rent that has accrued to many gentlemen of property in it, in consequence of such a plan as I have described above. And however much this account may surprise some who look no farther than to the surface of things; yet I am fully convinced, that no one who is acquainted with the internal state of that county, will say I have in the least exaggerated any one circumstance. And if so, I leave every one to judge of the benefits that have accrued *in the main* to that county, from the manufacture of stockings that has been carried on in it to a very great extent for upwards of thirty years past, entirely with foreign materials.

AGRICULTURE is allowed on all hands to form the most solid basis for the riches and prosperity of any state; and manufactures, as contributing to that end, when properly conducted, are highly beneficial. But when, from inattention, or want of knowledge, they are so improperly conducted as to retard the progress of this most useful of all arts, the apparent prosperity which they for a time produce, may justly be compared to the glowing lustre of a brilliant meteor, that for a time delights the fancy with the most agreeable ideas,—but when
it

it disappears, leaves nothing but darkness and gloomy desolation behind.

ABERDEENSHIRE was in a very different situation towards the latter end of the last, and beginning of the present century. For at that time a considerable manufacture was carried on in that county of worsted stuffs called *singrams*, *serges*, and *prunelloes*, &c. all made of wool the produce of their own flocks; which being bought from the farmer, and manufactured by the lower ranks of people, gave to each of them their proper share of the profits. The farmer was then a person of some consequence. — Servants were to be had in abundance; — his flocks and herds were numerous, — his crops luxuriant, — himself content and happy, and his *laird* sure of his rent; while decent frugality prevailed among all ranks of people. Improvements in agriculture were beginning, and would have made considerable progress among the farmers long ago, had it not been for the circumstances above enumerated. But now pinching poverty appears in every countenance, while taudry finery and ostentatious extravagance is seen in every corner. Credit for a short time is purchased at the enormous rate of thirty or forty per cent. of advance on the price of what

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is bought: and thousands of acres are now overgrown with heath where waving harvests have formerly flourished.

THINK not, however, I mean to insinuate, that no profits are made by the present manufactures and commerce of that place. It is not to be doubted but many individuals have made very genteel fortunes by both of these vocations. The master-manufacturer, and the importer of foreign commodities, have each a *certain* profit, and grow rich by that traffic; while the country in consequence of the total stop that is put to improvement in agriculture may be said to be a loser*. And the country-gentlemen, however
little

* It would be of much importance to the state, if country-gentlemen, and the legislature at large, would learn to distinguish with precision between those kinds of commerce and manufactures that tend only to enrich the merchant, and those that at the same time tend to enrich the country and augment its internal prosperity: for these are often disjoined;—so often, indeed, that those kinds of traffic which are in general most profitable to the merchant, are least beneficial to the country.—The merchant is never so happy, or so likely to acquire riches in a very short time, as when he obtains any monopoly in trade; but every monopoly in trade tends to impoverish the industrious subjects of the state.—The importer of foreign fineries finds it greatly for his own profit to encourage a spirit of dissipation and extravagance among all ranks of people: for he not only reaps profit on them

little some of them may at present see it, must in the end become very great sufferers;—as a little time, if the above induction of facts should not be satisfactory, will sufficiently show.—While things remain upon their present footing, gentlemen, with little pleasure and less profit, may force a few unavailing improvements a little forward;—but it never can be in the power of the mere farmer to do any thing of consequence in that way; so that the general improvement of the country must be at a stand.

BUT

in the mean time, but he knows, that what were accounted mere superfluities at first, soon become necessities of life, so that this trade will increase with the increasing demand for them.—It is his interest, therefore, and will be his study, to promote as far as he can, that general spirit of extravagance and dissipation, which is the most effectual bar to sober industry, and the most certain means of destroying the internal felicity of every individual of the state.—In consequence of this system, the people soon become poor, and the profits of the dealer increase with their poverty.—Like rich usurers who meet with needy spendthrifts, they advance what is desired at an extravagant premium.—Credit is given for an exorbitant advance of price.—This may be called the harvest of the moneyed trafficker; which is the more abundant, the less there is to give.—His profits therefore increase, as the misery of the country increases.—How absurd then is it in mankind to estimate the degree of the improvement of a country by the richness of its merchants? It usually happens, that when a state is exhausted to the utmost degree, and on the very verge of destruction,

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BUT unstable is the prosperity of that country, which has its chief dependence on the flourishing of its towns independent of its agriculture and peasantry: for a thousand circumstances may totally ruin the one, while the prosperity that results from the other can hardly be affected but by the total destruction of the state itself.—Such was the case with Genoa, that once proud mistress of the seas, which has long ago sunk into total insignificance.—Such was

destruction, its merchants are in the highest degree of splendor; as might be illustrated by many examples, ancient and modern, were it here necessary.

Too long hath the legislature of this country omitted to make this necessary distinction, which has led them into many errors that it is now high time for them to correct.—It is the interest of men of landed property to watch over the real prosperity of the labouring people, and to increase their real riches; for their own revenues must rise or fall with them.—The present time is all that a merchant needs to attend to.—When the poor are so far fleeced as not to be able to yield him any more of their substance, he can, without inconvenience, withdraw to another region, and carry off his plunder with him.—It is therefore highly impolitic to allow the councils of a nation to be guided entirely by a set of men whose real interest is not necessarily connected with the prosperity of the state.—Commerce ought to be encouraged as a useful handmaid of the state:—as a very valuable servant it is true, but still but as a servant; whose interests ought to be made subservient to that of the state, and not like those cunning factors of some opulent companies, who make the interest of their constituents give way to their own private advantage.

Antwerp, which but two centuries ago raised her towering head aloft, and looked down with contempt on all the other places of the earth. Antwerp, whose merchants were princes*, whose manufacturers were reckoned among the honourable of the earth, by a trifling revolution was totally abased, and never has been able to recover almost any resemblance of her former prosperity. And in Scotland the royal boroughs of Fife, which once flourished exceedingly by means of peculiar privileges, fishings, and trade, altogether independent of agriculture, that are long since removed to other shores;—are they not sunk into the lowest in-

* Lewis Guicciardin gives the following account of one of the merchants of Antwerp: "Li piu ricci & i piu nominati di tutti questi mercatanti, sono i Focheri, Alamani d'Augusta, il capo della cui famiglia, cio e' il Signor Antonio, Principe veramente de gl'altri mercatanti, essendo morto poco fa, pur nella sua patria, lasciò per testamento il valore de piu di sei milioni di scudi d'oro, oltre a tante altre grossissime facultà, che sono in quella illustre, & splendida famiglia, guadagnate nell'exercitio mercantile in termine di circa settanta anni *Discip de Paix Bass*, p. 116." We are apt to believe, in Britain, that no merchants ever equalled in opulence the merchants of London;—but I believe there is no instance of one so rich as this Signor Antonio Focheri, who bequeathed at his death, not to mention his other property, six millions of schudi, which, at 3s. 9d. each, amounts to L. 1,120,500 Sterling. What a noble idea does this give of the magnificence of this trading city at that time!

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significance? And ought not this to afford us a striking lesson of the instability of any grandeur that does not ultimately depend on agriculture for its support?

BUT although the profits that result to a state are always much greater, if its manufactures are supported by the produce of the state itself, than where the materials are brought from another country, yet they are hardly in any case so pernicious as in that which I have mentioned.

FOR if the manufacture necessarily requires to be carried on by people in concert with one another, if I may use this expression; that is, where those who practise the different branches of it, stand in need of the assistance of each other, so that it must be carried on with a number in one place, it will rather have a tendency to promote than retard the progress of agriculture.

IF the manufacture necessarily requires the aid of machinery in a great degree, or stands in need of shelter for the operators, so as to require extensive buildings to be erected before it can be properly carried on.

OR

OR if those who practise it must necessarily serve an apprenticeship before they can attain a proper knowledge in their calling,—the establishing of such manufactures in any country may be considered as beneficial to the interest of agriculture, and therefore tend to the good of the state.

FOR if a manufacture of any of the three classes above enumerated be established in any rich and fertile country, by convening a number of people into one place, who must all be fed by the farmer, without interfering with any of his necessary operations, they establish a ready market for the produce of his farm; and thus throw money into his hands, and give spirit and energy to his culture. While his servants, unseduced by the manufacturers, who are at some distance from him, or separated by barriers that are not overcome without some considerable effort, continue to perform their labour with alacrity, and share with their master in his reasonable profits; and thus, with pleasure and satisfaction to themselves, enable him to obtain still more money, and carry on still higher degrees of improvement.

IT

IT is in this manner that the silk-manufacture in England, although carried on entirely with foreign materials, must be considered as highly beneficial to the state, although much less so than if we ourselves, or our colonies, could furnish these materials.

THE manufacture of ropes from hemp, that is carried on in so many different parts of the island, will furnish us with an example of the second class of beneficial manufactures, although employed in working up foreign materials.

AND every manufacture of iron or steel throughout the island, affords us an example of the third class of manufactures, that may be carried on with great benefit to the state, even where they are obliged to have recourse to foreign markets for their rough materials.

I AM afraid you may think these discussions rather tedious than entertaining; but they are undoubtedly of great importance; on which account I hope they will meet with a favourable indulgence from you.—Many persons in England do not make a careful enough discrimination in this respect, when they are about to establish new manufactures in any place;—but in
Scot-

Scotland you will hardly meet with one among the middling ranks of people, who do not imagine, that all sorts of manufactures are almost equally beneficial to the state; nor have they any other rule of estimating the comparative utility of different sorts, but by the proportional value of the manufactures worked off in a given time. It is evident, however, that this is by no means a just mode of calculating; and therefore it became extremely necessary in a disquisition of the nature I have undertaken, to examine this matter thoroughly; because, if it shall be found necessary to adopt any sort of manufactures, it becomes expedient to be certain if the particular manufacture to be so recommended, will be attended with very beneficial consequences to the state, or the reverse.

LET this be my excuse for having detained you so long upon this preliminary discussion.—I am, &c.

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OBSERVATIONS

NATIONAL INDUSTRY.

LETTER THIRD.

C O N T E N T S.

Ineffectual efforts to rear abundance of flax in Scotland.
——The ruinous consequences that attend the cultivating flax in a poor country.——The growing of wool in similar circumstances highly beneficial.——The richness of the soil in England much owing to this cause.
——Reasons why sheep have been less attended to in Scotland than in England.——Bad effects that have resulted from the attachment of the Scots to black cattle instead of sheep.——The general indolence of the people in the Highlands in a great measure owing to this cause.——It necessarily tends to involve the poor in misery and distress.——It is the chief cause of their present difficulties.——Possibility of still rendering that country flourishing and happy.

OBSERVATIONS

ON

NATIONAL INDUSTRY.

LETTER THIRD.

TO MR. *** LONDON.**

DEAR SIR,

September 5, 1775.

BRITAIN has never been thought capable of furnishing materials for carrying on any manufacture to such extent as those of linen and woollen: the last of which has been long firmly established in England; and for some years past vigorous efforts have been made to establish the former in Scotland, although hitherto with less success than many sincere well-wishers to their country would be pleased with.

HITHERTO

HITHERTO the linen manufacture in Scotland has laboured under the great inconvenience of being obliged to depend on Holland, and other foreign states for the principal part of the flax that has been manufactured here; and has felt those rubs that may naturally be expected in these circumstances, from a commercial people, who in general know their own interest as well as any one, and pursue it with unwearied application; so that the rough materials have been from time to time raised in their price, till they are now about *cent. per cent.* dearer than when the manufacture was first established in Scotland, as I have already had occasion to remark.

BUT although the encouragers of this manufacture seem to have been fully sensible of the absolute necessity of our rearing the raw materials ourselves, if we wish to continue it, and have therefore spared no pains or cost to encourage the growth of flax in this country; yet they have never been able to attain the desired end. And there is reason to fear that the manufacture is on this account but in a very declining state at present.

IF we would take a cursory view of this island, and compare the nature of the soil and other particulars

particulars in each of the two grand divisions of it, we should at first sight be ready to imagine, that the inhabitants of each of these districts had resolved to adopt the manufacture that most naturally suited the other. At least this is remarkably the case with Scotland, which has undoubtedly made choice of a manufacture for herself, that might have been carried on to much better account in England.

For as flax is an impoverishing crop, taking a good deal of nourishment from the soil, and yields nothing in return by which it might in any degree be again recruited, it is evident that this crop could only be cultivated with propriety in a rich and fertile country. And as the soil of England is allowed to be richer and more fertile than that of Scotland in general, it seems that England would have been better adapted for rearing flax, and of course for carrying on the linen manufacture, than Scotland.

ON the other hand, the numerous mountains in Scotland, so exceedingly proper for rearing sheep, and the many rills that descend from these, so well adapted to many of the operations of the woollen manufacture, would seem to indicate, that this country was more naturally fitted

fitted for carrying on that manufacture than England, which is much more deficient in both these respects.—But,

Not to prosecute this parallel farther at present, it may be observed, that if even the most fertile fields in Scotland could not, without evident loss to the public, be made to rear extensive and continued crops of flax; how much more pernicious would it be to the poorer and more barren countries that border upon or are included in the Highlands, which, with no degree of culture that has hitherto been devised for them, have been rendered capable of producing abundant crops of grass or corn!

IN these situations, should this ruinous crop be ever introduced, the best soils would hardly be sufficient to rear it to any degree of perfection. And as all these rich spots would soon be exhausted, the soil would in a short time be so much deteriorated as to become not only unfit for bearing flax, but even for rearing corn of any sort to perfection.

ON this account, it is undoubtedly the interest of every gentleman who is possessed of lands that stand in need of melioration, to guard with the

the utmost care against introducing this crop into his fields. For, however great the profits might be that should attend the first two or three crops of it, the inevitable consequences would be ruin to his estate in the end. Like a slow but subtle poison, that may be pleasing to the palate, although destructive to the human frame, he ought to dread its venom while he tastes the sweet, and guard against its baneful influence with the most cautious circumspection.

LUCKILY, however, for the gentlemen of property in the Highlands, and other districts that would be in greatest danger of being hurt by it, the difficulties attending the culture of this plant in their particular situation, are so great and unsurmountable, that they run little risk of suffering very deeply in this way: although I am well informed, that some of the most extensive flax-raising counties begin to feel these effects of the culture of this plant in a very sensible degree, and are therefore obliged to retrench very much in this respect; insomuch that in some of these *, not one fourth part of the flax-seed is now sown that used to be a few years ago.

* Particularly Perthshire.

FOR these reasons, with others that need not be here adduced, it is in vain to expect that ever abundance of flax can be reared in the Highlands, or even Lowlands of Scotland, to supply materials for an extensive linen manufacture.

THE same objection, however, does not lie against the rearing of wool. For should the country be found to be well adapted for the nourishing and rearing sheep to perfection in other respects, considered in this point of view it would perhaps be the most advantageous produce that could be obtained from the soil, as we know of no more speedy and effectual method of meliorating a poor and barren soil, than depasturing it with sheep.

FOR the dung of this little animal is justly esteemed a more fertilising matter, than that of any other domestic animal; so that if they are penned (folded) on proper places in the neighbourhood of their pasture-ground, these spots will be so much enriched, as to be capable of producing abundant crops of grain. And if these spots are laid down to grass again before they are too much exhausted, they will continue ever afterwards to carry a great deal more grass than formerly. This would render the
same

same fields capable of nourishing an additional number of sheep, or other animals; which would yield a proportionally greater quantity of dung, that would serve to meliorate still more ground; and so on it might go forward, constantly improving the soil more and more *in infinitum*.

NOR are the advantages of this improvement confined to arable land alone, but may be experienced in the same degree in mountainous countries that do not admit of tillage at all. For the ground thus manured, however steep or rugged it may be, will continue ever afterwards to yield a much greater quantity of richer grass, than it ever could have produced without this powerful *stimulus*. So that in this case the same consequences follow as above.

DOUBTLESS this circumstance, although not attended to by political writers, has contributed not a little to the fertility of the soil in England; and is perhaps one of the principal causes of its superiority in this respect over Scotland. For since the earliest accounts of that country, we find that sheep have always been held in high estimation in it. And from the days of Edward III. till the restoration, the

profits the farmers must necessarily have drawn from this animal having been evidently greater, than from any other product of the fields, they must have always been reared in prodigious numbers. And any one who attends to the necessary melioration of the soil, where great flocks of sheep are kept, and little arable ground, will not be surpris'd if in many hundred years that should become eminently conspicuous.

FROM these considerations it would seem to be an object well worth the serious attention of every proprietor in Scotland, to examine with the most scrupulous accuracy, if wool of a good quality could be reared in abundance in this country, so as to furnish materials for an extensive manufacture; that thus we might be enabled in time to reap some of the advantages that necessarily result from the abundance of our flocks of sheep.

It seems at first sight to be a little surpris'ing, that in such an extensive tract of country, that seems to be so capable of rearing sheep in abundance, as in the Highlands of Scotland, this animal should have been so long neglected. But the power of habit is such as is not easily overcome; so that those who have been long accustomed

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customed to follow a certain routine, go on in it with a sort of blind perseverance, without ever taking the trouble to examine if the practice they follow be more beneficial than others equally within their power.

THIS has probably been the case with the inhabitants of the Highlands. For when feudal anarchy took place in these regions,—when robbery was practised as a trade, and sudden inroads from the neighbouring clans were always to be dreaded,—cattle, as being easier defended or driven to places of safety, than sheep, would naturally become the favourite stock of these people; especially as they could have no temptation to wish to have more wool than was merely sufficient for their own clothing, such as it might be. For as commerce could not be there practised, no idea of manufactures for foreign export could ever enter into their imagination. A great quantity of wool, therefore, must have been to them only an unnecessary and useless burden.—But the hides of their cattle afforded them shoes, bucklers, thongs, and many other articles which must have been useful to a savage people, and thus highly esteemed by them.

IN this manner they have acquired originally a fondness for that kind of live stock. Nor have they as yet become sufficiently acquainted with the advantages of a civilized life, to be able to perceive what a difference it produces in the value of articles of this sort.

INDUSTRY, and activity of body and mind, are the qualities that contribute in the highest degree to the happiness of every civilized nation: those circumstances, therefore, which tend to promote these in the highest degree, ought to be attended to with the greatest care.

IF a grasing-country has its chief dependence upon cattle, it is attended with this peculiar inconvenience, that as the inhabitants have no necessary inducement to industry, they naturally abandon themselves to idleness. And a habit of indolence being once acquired, it must be extremely difficult to get it eradicated.

BUT if the inhabitants have their chief reliance on sheep, the necessary operations of shearing and cleaning the wool, &c. oblige them to be in some measure more active than they otherwise would have been. And as they would have constantly among their hands materials so
necessary

necessary for their own and families clothing, they could hardly avoid falling into the way of manufacturing it in some sort; which would have a powerful tendency to prevent that listless indolence from getting footing among them that must prevail among the other species of graziers.

CONSIDERED, therefore, in this light, it would seem probable, that a grazing-country, that has its chief dependence on sheep, is much nearer a state of improvement than one that depends upon cattle.

ANOTHER very considerable inconvenience that attends a cattle-raising country is, That as there can be no constant market for these in the country itself; and as the inhabitants, in these circumstances, would have no other marketable commodity, they must depend entirely upon others for almost the whole of their subsistence; so that when, by any accident, the demand from abroad is lessened, the value of their cattle sinks prodigiously; and in some cases they cannot be sold at all. But as the inhabitants are even then under a necessity of having some bread-corn, and other necessaries of life, (not to mention their rent), they must
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in these cases be reduced to a state of extreme misery, which not only debilitates the body, but also enervates the mind, and renders the whole people incapable of any generous exertions *.

BUT what renders this still more to be lamented is, that almost the whole calamity in these cases falls upon the lower class of people who thus become little better than slaves, subjected in all cases to the capricious nod of a set of men who keep them in the most abject thralldom: for, as the cattle must all be driven to a distant market, and sold in considerable parcels together, it becomes impossible for a poor man to carry his own little stock thither himself. The poorer sort of people are therefore subjected to the necessity of dealing with a set of men called *drovers*, who, on account of the difficulty of travelling in that country, which prevents access to strangers, have in some measure an entire monopoly of the sale of cat-

* Were it necessary here, it would be no difficult matter to show, that an accidental stagnation of this sort, coinciding with a failure of crop in the low countries, was the immediate cause of the distress that gave rise to the thoughts of emigration, and the present complaints in the Highlands.

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tle, and therefore give almost what prices they please; and thus in a short time amass more wealth, and live in greater splendour, than many of the ancient chieftains themselves can do. And as these drovers are usually considerable graziers themselves, when at any time the demand for cattle slackens a little, it is but natural to suppose, that they will then sell only their own; so that every other person is then reduced to the most pinching want.

HARD, indeed, must be the lot of those who are subjected to such a complication of distresses, as the situation of these poor people must necessarily expose them to!

BUT if the country were in a great measure stocked with sheep, some part of these distresses would be immediately removed: and, with a little necessary attention in the proprietors of that country, the whole might in a short time be remedied; for as they would then have not only the carcase to bring to market, but the wool also, they would have at least two chances to escape a bad market for one they have at present.

AND

AND if they should be induced to fall into the way of manufacturing their own wool, (which would not be difficult to accomplish if once they had the materials in abundance,) money would come among them in plenty;—emigrations of all sorts would quickly cease;—the number of people would encrease;—a spirit of independence would prevail, and entirely abolish that shocking disparity of condition, which at present annihilates (if I may use the expression) their souls, and enervates their bodies.—Their mental faculties would gradually acquire strength, and a spirit of enterprise and emulation get footing among them; which would enable them to perceive, and improve to the utmost, all the advantages that their situation afforded them;—advantages, which, in certain respects few can equal.

SOME may perhaps deem it impossible ever to effectuate a change so desirable; and therefore, with a desponding indifference, think that every proposal to effectuate this change is chimerical. But I cannot bring myself to view it in this light. Experience may easily convince us, that no two men differ more widely from one another, than the same person may do from himself

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himself in different circumstances. Like a spark of fire concealed under a heap of rubbish, the human mind may long lie buried under the overpowering load of ignorance and oppression; but free it from these chains, and it will quickly develope its powers. Feeble, indeed, are its first exertions, and easily repressed; but if these are encouraged, it gradually waxes stronger and stronger, till at length it blazes forth with irresistible power and glory. It is thus that South Britain, that once poor despised country, —the prey of every invading power, and slave of many successive conquerors, has at length become the envy or the dread of all the nations around it. Nor will the same means fail of producing similar effects in every other country. We have seen, that a small spot of this peculiarly-favoured isle is unfortunately involved in circumstances which render the inhabitants less comfortable than those of other parts of Great Britain. But the sera seems to approach, when they will partake of the same blessings as the other parts of the island. Almost all the disagreeable part of the change is already effected. —The anarchy that arose from the loss of their chieftains, is now in a great measure ceased, by the establishment of the civil power, which

which has now got such firm footing among them as totally to abolish all marks of their former jurisdiction.——The old men, who were unreasonably wedded to their former customs, are now almost the whole of them dead; and with them a great part of their ancient prejudices have disappeared.——The late wars carried many of the common people abroad, who have acquired some knowledge of the advantages of civil society; and the idea they have given of the blessings of liberty, and the spirit of independence that they have diffminated among their fellows, has, no doubt, contributed to excite that desire of emigrating which at present prevails among them. Even this spirit for emigration I consider as one of the most favourable symptoms of their being ready to adopt any rational plan of improvement, as it proves, that their own customs and country are in some measure indifferent to them; and that they are sensible of the disagreeableness of their situation, and would willingly exert themselves to render it more comfortable. It is the crisis of the disease which has long harassed them. If nothing is now done to restore their exhausted strength, the consequences may be fatal; but but if they are duly cared for, and have proper cordials administered to them, they will quickly attain

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attain that health and vigour of which they have been so long deprived.

FIRMLY convinced of these facts, I shall proceed in my next candidly to enquire, whether it seems to be probable, that wool of a good quality may be raised in that part of the country, to give any reasonable room to hope, that an extensive woollen manufacture may be established in Scotland; which will give me an opportunity of remarking many particulars with regard to the raising of wool, and management of sheep, that seem to have been hitherto but too little attended to.—Yours, &c.

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OBSERVATIONS

ON

NATIONAL INDUSTRY.

LETTER FOURTH

C O N T E N T S.

Objections to some of the foregoing remarks.—Manu-
 factures of fine laces, and other articles of luxury, in
 which the materials are of little value, supposed to be
 beneficial to a state, exemplified in the bone-lace manu-
 facture in Buckinghamshire and Paisly.—Answers,
 —shewing that these deserve not to be highly encour-
 aged, —exemplified in the fine manufactures of France.
 —Strictures on the manufactures of Geneva,—and
 on the Spittalfields silk-manufacture.—Observations
 on the ineffectual attempts that have been made to im-
 prove agriculture in Scotland.—The encrease of ma-
 nufactures and commerce, the only effectual way of en-
 couraging agriculture,—exemplified in the town of
 Aberdeen.—Agriculture cannot possibly flourish
 without the aid of one of these.—Commerce alone
 almost always ineffectual without manufactures,—and
 why.—Hence the agriculture of Scotland is chiefly
 hurt by our neglect of proper manufactures.—An
 enquiry, what manufactures may be most beneficial to
 Scotland.—No other staple commodity produced in
 it that is capable of supporting a valuable manufacture,
 unless it be wool.—Can fine wool be raised there in
 abundance?—Disquisitions relating to sheep, with a
 view to answer this question.—Of the influence of
 pastures on the quality of the wool,—various exam-
 ples.—Conclusion:—Rich pastures do not improve
 the fineness of the wool.—Abundance of food at all
 times necessary for the preservation of the wool;—win-
 ter food for sheep, on this account, as well as others,
 ought always to be provided;—Whins (furze) strongly
 recommended for this purpose;—Directions for propa-
 gating them.

OBSERVATIONS
ON
NATIONAL INDUSTRY.
LETTER FOURTH

TO MR. *** LONDON.**

DEAR SIR,

September 15, 1775.

I HAVE the pleasure to acknowledge the receipt of your very acceptable favour of the 1st instant; and I am happy to find, that any thing in my power can contribute towards your entertainment.

You seem to be satisfied, that those manufactures are in general most advantageous to a
state,

state, that are employed on working up some of the native products of it; but you cannot be convinced that I have not drawn too strong a picture of the inconveniencies that sometimes attend the others.

For the good of a country in whose prosperity I am much interested, I could wish that your opinion should prove to be right; but facts speak strongly, and to these I must appeal as decisive in this case. You can have many opportunities of being informed with regard to the truth of those I have stated. All I desire is, that you will make the necessary enquiries at those who are capable of giving you information, and I make no doubt but you will soon find that I have in no particular exaggerated in the least.

You think too that I have entirely omitted a case that ought to have been particularly attended to in this discussion, viz. Those manufactures, that although subsisting by foreign materials, work them up to such a degree of fineness, as makes the prime cost of the materials be a matter of hardly any moment at all; so that in this case it is of little consequence whether the materials be brought from another country

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country or not. And you mention the manufacture of thread-lace at Newport-Pagnel, &c. in Buckinghamshire as an example of this sort; and think you have heard, that something of the same sort of fine linen manufacture is carried on about Paisly, or some other parts of Scotland.

YOUR remarks here are very just. I did omit this kind of manufacture altogether;—not through forgetfulness, but because I did not think it of importance enough to deserve a place among those that ought to be considered as principal objects of attention to a whole nation; and as being attended with disadvantages peculiar to themselves, that ought to make them be encouraged only with very great caution.

THOSE manufactures always deserve to be most cherished, which afford the prospect of a constant and steady demand: for if this demand shall be apt to vary, the poor operators will be often thrown idle; which is always attended with the most distressful consequences to society. But things which minister immediately to the *real* wants and necessities of mankind, have a prospect of being more constantly called

for, than those that only furnish food for luxury and dissipation: for as luxury is ruled by fashion and caprice, it may demand with the most unreasonable avidity to-day,—what it shall neglect and condemn to-morrow. On this account the plainer and coarser manufactures, that are worn by the bulk of mankind, for service, rather than for shew, experience, for the most part, fewer gluts of market than those that are finer. The manufactures of Norwich, who deal in fine crapes, and other delicate stuffs, are laid idle three times, for once that the Yorkshire manufacturer, who deals chiefly in low-priced serviceable cloths, experiences the same misfortune.

If you look over the wardrobe of your grandmother, you will perceive what revolutions have happened in the taste of mankind for laces, and other fineries of that sort. How many suits of this kind do you meet with that cost amazing sums, which are now, and have long been entirely useless!—In our own days do we not see, that one year Brussels laces are most in fashion, and purchased at any price; while the next, perhaps, they are laid entirely aside,—and French or other kinds of laces, or fine sewings, the names of which I know not,—are only priz-

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ed. Muslins are sometimes preferred;—sometimes lawns,—gauzes, or other fine kinds of linen manufactures, are more in vogue; so that the poor manufacturer who has his bread depending upon the sale of any one kind of these, must be often reduced to very great distress.

THESE inconveniencies were not foreseen by Lewis XIV. of France,—who, led away by his own fondness for finery, thought to make his country the most flourishing on the globe, by making his people acquire a superiority over all other nations in those manufactures that ministered to the luxuries of mankind.—At a great expence he made them attain an eminent degree of perfection in these several arts:—and while his court was considered as the standard of elegance and taste to all the world, and so long as he himself continued to protect them with all his influence, they flourished abundantly; but no sooner did the power of that influence diminish, than they felt themselves involved in grievous distresses, so that they were obliged in a great measure to abandon these futile labours, and betake themselves to more plain, but useful manufactures; which they have now brought to such perfection, as

to be able to beat the English out of many foreign markets, where they had continued unrivaled for several ages.

WHEN we view things in this light, it may perhaps appear doubtful if the inhabitants of Geneva have made choice of the most proper kind of manufacture upon which they have their chief reliance, (that of watches, and other fine trinkets of hard-ware); as a taste for these fine kinds of trinkets, in which they chiefly excel, may diminish in foreign countries. But it is only a small state, so that there is less danger of their overstocking the market, than if a populous nation were to adopt in general a manufacture of the same sort. The ease, too, attending the carriage of such trinkets is a consideration of some importance to an inland country.

OUR own silk manufacture feels some of the inconveniencies that arise from this cause; on which account chiefly, the Spitalfields weavers have given more disturbance to the nation for a century backwards, than all the other manufacturers in it when put together.

ON

ON this account, too, these manufacturers are obliged to submit to the inconvenience of remaining in a part of the country where almost all the necessaries of life are dearer than in any other part of it; because, were they to remove at a distance from court, the centre of fashions, they would not so soon have an opportunity of being with certainty informed of many circumstances that it concerns them much to know.

FOR these reasons I imagine it would be improper to endeavour to establish manufactures of this sort to a very great extent.—A particular place or two, may be with safety employed in that way; but when we come to consider of ways and means for employing the bulk of a nation, these are hardly deserving any degree of attention.

You seem likewise to be much surpris'd at the account I have given of the encouragement the manufactures had met with in Aberdeenshire; to the evident hurt of agriculture, which you had always heard was almost the sole object that engrossed the attention of the gentlemen in Scotland; so that you imagined every thing would have been made to give way to
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this their favourite profession; on which account you had been made to believe they in a great measure neglected trade and manufactures of every sort. You wish that I would be a little more explicit on that head, and endeavour to explain this seeming difficulty.

IN obedience to your commands, I shall throw out some further observations on that subject; which I avoided to do before, lest you might have become tired of these general observations.

You have not been misinformed. It is certainly true, that the gentlemen in Scotland have in general bestowed a greater attention to agriculture for several years past, than to any other object whatever; some of whom have attained perhaps to as great perfection in the knowledge, and accuracy in the practice of this art, as is to be met with in any part of the globe. Nor is it less true, that no other art or profession would be encouraged by them, if it seemed to interfere in the least with the interests of this their favourite art. Yet it happens here, as in many other cases, that the interests of this too much favoured child are essentially
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hurt by this ill-judged partiality in its favour. It is not enough that we *wish* to make agriculture flourish: if we hope to do this effectually, it is incumbent upon us to discover what are the circumstances that may most effectually contribute towards this end.

THIS study seems as yet to have made but small progress in Scotland; which is the real cause of that seeming solecism of which you complain. It is a pity that it has not hitherto been more attended to; but it is never too late to amend.

THERE are some instances of nations peculiarly situated which have flourished by means of commerce without agriculture;—there are also a very few examples of manufactures flourishing among a people who could have little dependence on the produce of the soil: but there is not among all the records of past ages a single proof of a people who have enjoyed for any length of time a spirited agriculture, without the aid of commerce, or manufactures, or both.

NOR

Now is it possible that it should be otherwise. For without commerce or arts, what inducement has the farmer to cultivate the soil? In this case, every man will only wish to rear as much as is sufficient for his own sustenance, and no more; so that if the soil could afford a hundred times the produce that is sufficient for them, it will be allowed to remain an uncultivated waste. And if, in that country, any man should be so foolish as to rear large crops, what would it benefit him! Every man has enough for his own subsistence, so that he wants none of that superfluous produce. It must therefore be suffered to perish without being of any use at all to the owner.

For this reason a nation peopled only by farmers, must be a region of indolence and misery. —If the soil is naturally fertile, little labour will procure abundance; but for want of exercise, even that little labour will be burthensome, and often neglected;—want will be felt in the midst of abundance, and the human mind be abased nearly to the same degree with the beasts that graze the field. If the region is more barren, the inhabitants will be obliged to become

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become somewhat more industrious, and therefore more happy. But miserable at best must be the happiness of such a people.

THOSE, therefore, who wish to make agriculture flourish in any country, can have no hope of succeeding in the attempt, but by bringing commerce and manufactures to her aid; which, by taking from the farmer his superfluous produce, gives spirit to his operations, and life and activity to his mind.

WITHOUT this *stimulus* to activity, in vain do we use arguments to rouse the sluggish inhabitants.—In vain do we discover that the earth is capable of producing the most luxuriant harvests with little labour:—our own abundant crops are produced as undeniable proofs of this in vain.—But place a manufacturer in the neighbourhood, who will buy every little article that the farmer can bring to market, and he will soon become industrious. The most barren fields will then become covered with some useful produce.—Instead of listless vagabonds, unfit for any service, the country will abound with a hardy and robust race of men, fit for every valuable purpose; and the

the voice of festivity and joy be heard in every corner, instead of the groans of misery, and the sighs of discontent.

SUCH are the happy fruits that naturally result from the alliance of agriculture with manufactures and commerce.

THESE are consequences that must so readily occur to any one who considers the subject with ever so little attention, that I am afraid you will think it superfluous in me to have insisted upon them at such length: yet true it is, that I have hitherto met with hardly any one person in Scotland, who seems to have attended to these particulars with such care as is necessary. Instead of this, while manufactures are totally neglected, as not meriting the attention of the country-gentlemen, in every corner you meet with many worthy and public-spirited men, who having adopted in too limited a manner, the idea, that agriculture is the only solid basis of the riches of any nation, seem to be resolved to make it flourish here in spite of all opposition; and persist, like Sisyphus, with immense labour and pain, to force the stone directly up the hill; which is no sooner left

left to itself, than it tumbles again to the bottom with the utmost rapidity.

BUT to drop the metaphor,—nothing is more common than to meet with gentlemen, who, at an immense expence, procure servants and implements from England and other places, to set an example to their tenants of the way to obtain good crops of grain. Premiums are offered to excite them to emulation; threatenings are employed to deter them,—and every argument that can possibly be devised, is used to persuade them to follow such an example: but in vain.—Their stupidity,—their obstinacy, as the gentlemen term it, but really and truly the inability of the poor tenants to do it, prevents them from profiting by these lessons. How much easier and more pleasing would it have been to them, to have begun in the right way of encouraging them, and leave the rest to nature! Have they not opportunities of observing every day, that in the neighbourhood of a ready market, no inducements are necessary to excite the common farmer to become industrious, and carry on improvements of every sort with success! A particular case occurs to me just now that is so directly in point, that I cannot resist the temptation of producing it as an example of

of the rapid progress with which improvements in agriculture are made when circumstances are favourable.

THE town of Aberdeen has made great advances in trade and manufactures within these thirty or forty years past. The number of inhabitants has increased greatly within that period.—Money has become more plenty there than formerly.—Their manner of living is now more elegant and expensive; articles of luxury have increased.—In consequence of good roads having become more common, horses and wheel-carriages have also become extremely numerous.—On all which accounts, the demand for fresh vegetables has greatly increased in that place within the period above mentioned.

BUT, on account of the particular situation of that town, it was a matter of some difficulty to augment the produce of the fields in that neighbourhood, and supply the daily increasing demand for these. This city is placed in the midst of a country that is naturally the most sterile that can possibly be imagined. For, unless it be a few hundred acres of ground that lie between the mouths of the rivers Dee and Don, close by the town, there was not an inch of ground for
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many miles around it that could supply the inhabitants with any of the necessaries of life. On the east is the German ocean;—on the south Grampian mountains come close to the river, terminating in a head-land on the south side of the harbour called the *Girdle Ness*;—and on the west and north, it is environed for many miles with an extended waste, the most dismal that can be conceived, in which nothing can be discovered but large masses of stone heaped upon one another, interspersed here and there with a few bushes of starved heath, or disjoined by uncomfortable bogs and spouting marshes, the most unpromising to the views of the farmer that can possibly be imagined.

BUT what is it that human industry cannot perform!—what undertaking is too bold for man to attempt when he has the prospect of being repaid for his labour! Even these dismal wastes, it was imagined, might be converted into corn-fields.—The ground was trenched;—the stones were blasted by gun-powder, and removed at an immense expence;—manures were purchased:—and thousands of acres of this sort of ground are now waving with the most luxuriant harvests, and yield a rent from 5 l. to 8 l. Sterling per acre.

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IN any other part of the world that I have seen, it would be reckoned impossible to convert such soils to any valuable use; and the most daring improver that I have met with any where else, would shrink back from attempting to cultivate a field which an Aberdeensman would consider as a trifling labour. Long habit has familiarised them to such arduous undertakings,—undertakings which could not be attempted any where else, as unless in such a particular situation as I have described, the improver could never be repaid.—For in what other part of Europe could a man lay out 100l. Sterling, or upwards, on an acre of ground, before it could be put under crop, with any prospect of being repaid?—yet this is no uncommon thing in that neighbourhood.

NOR is this all: For to such a height is the spirit for improvement risen in that part of the world, that they are not only eager to cultivate these barren fields, but even purchase these dreary wastes at a vast expence for that purpose. The last spot of ground of this sort that was to dispose of in that neighbourhood, was fenced off by the town of Aberdeen in the year 1773, for ever, at an annual quit-rent, or, as we call it,

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it, *feu-duty*, of thirty-three or thirty-four shillings Sterling per acre,—although it was not then, and never could have been worth sixpence per acre, if left in its native state,—nor could be converted into corn-ground but at an expence nearly equal to that above mentioned.

It ought to be farther remarked in favour of Aberdeen improvers, that as they are at an unusual expence in first bringing their grounds into culture;—so they continue afterwards to cultivate them with greater care and attention than is common perhaps in any part of the island, so that they have more abundant returns, and can afford to pay greater rents, than in any other part of Great Britain.

COULD I produce a more satisfactory proof, that a good market will always produce a spirited agriculture? or is it possible to bring a more convincing argument in favour of the poor people in other corners of the country, who are accused by their proprietors of obstinacy, and other bad qualities, because they do not improve their fields in the manner the proprietors could wish;—seeing many of those who carry on improvements about Aberdeen, are people
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who have come from distant parts of the country, where no sort of improvements were ever carried on,—and have no other arguments made use of to induce them to do it, but the only feeling one that ever can be made use of, their own interest?

It has always appeared to me a little surprising, that mankind should have in general entertained such just ideas with regard to the means of making manufactures flourish, and such defective notions concerning improvements in agriculture. For there is no man so ignorant as not to know at once, that the only possible way to make a manufacture thrive, is to procure a ready vent for the goods; as without this every other encouragement, however liberal, must be ineffectual. And is it not sufficiently obvious, that agriculture, although it has been distinguished by another name, is, to every intent and purpose, a manufacture in as strict a sense of the word as the forming a yard of broad cloth;—and differs not in any respect from other manufactures as to the means of making it flourish?

PERHAPS, as you may never have had occasion to consider agriculture in this point of view,
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it may not be unentertaining to run the parallel a little farther.

WHAT can more exactly resemble a whole nation practising agriculture without any commerce, than another nation of manufactures likewise without commerce,—supposing the latter by a miracle to be fed, like the Israelites of old by manna from heaven? Here every one, as manufacturing only for himself, must of necessity be idle the greatest part of his time; and as he could have no motive for emulation, nor any stimulus to invention, he could never attain any sort of perfection in that art he ought to have practised; so that millions of years might pass in this state, without the smallest hope of improvement.

I HAVE hitherto considered manufactures and commerce together, as supposing that manufactures cannot be carried on without some degree of commerce. But it may be alleged, that commerce may subsist without manufactures; and that if agriculture is assisted by commerce, manufactures may not be so necessary to the flourishing of agriculture, as I have supposed.

THIS seems to be the opinion of many gentlemen in Scotland, who, although sensible of

the absolute necessity of a market for the produce of a farm, think there is never room to complain in this respect, if that farm is situated within an accessible distance of a sea-port,—as that may be considered as a never-failing market for every produce of a farm.

THE difference, however, is very great, between a market obtained by this means, and one that arises from manufactures being established in the neighbourhood. For,

IN the first place, it may be often necessary to thresh out grain when it would be impossible to preserve it on ship-board in a sound state till it could reach a foreign market;—

AND, in the second place, many articles that the farmer could dispose of with profit, do not admit of being carried to foreign markets in any case whatever;—so that he who has to rely upon these alone, must be subjected to very great inconveniencies.—All sorts of green crops come under this denomination,—and the live stock that may be fatted by means of these; which, in such a situation as this, require to be slaughtered, and sold at less than half the value, and three times the risk, that they might

might have been disposed for at a market when newly killed.

BUT the circumstance that is of greatest weight in this case is, that unless the farmer shall chance to live in a very fertile country, where agriculture has been long practised with success, he must be deprived entirely of the benefits of commerce, however favourable his situation may be for that purpose.

FOR as merchants are induced to settle in a place, and carry on any particular branch of business, only when there is an opportunity of carrying on that branch of business on an extensive scale,—corn-merchants cannot be expected to settle in any country where the articles they are to deal in are not to be found in abundance, so as to keep them fully employed at all times.

THE farmer, therefore, who finds himself placed ever so near a sea-port, if he has not the advantage to meet with merchants settled there, is nearly in the same state, as if he lived in an inland country at ever such a distance from markets*.

* It is on this account chiefly, that the free commerce of corn, which is so beneficial to England, is but of little use to Scotland.

FOR before he can have access to these markets, he must be able to furnish, at once, such a quantity of grain as will load a whole vessel fit to carry it to the market.

He must, in the next place, become merchant himself,—must settle a correspondence at the port to which he is to send it;—be acquainted with the character of the persons he has to deal with, the prices of the market, and all other circumstances requisite in a compleat merchant.

BUT who does not see how difficult it is to meet with any man who is in such circumstances as admit of doing this, or has a capacity for it, who would submit to place himself in such a disagreeable situation? or who does not perceive how incompatible this profession would be with the business of a farmer?

AND if it be next to impossible to meet with one man who is capable of doing all this,—what advantages can it be supposed a common farmer can reap from that situation, who is ignorant of every thing but his own affairs; which must, and ought ever to be the case with the bulk of farmers! He is nearly in the same situation, that

that a mere plain manufacturer in the neighbourhood of Leeds or Wakefield would be, if the markets of these two places should be destroyed, and he himself should be obliged to send his small stock to Holland, London, or the other markets to which his goods at present are sent.——Just now he labours at home contented five days in the week, carries his web upon his shoulder on the market-day, and returns with the price of it in his pocket, or with necessaries for his family purchased with it.——But instead of that, he would then be obliged to wait till he should get a whole ship-load,——form a correspondence with the people in the different countries to which they are sent, negotiate bills, and do other things that have no more concern with his business as a manufacturer, than he has with the employment of a minister of state. Is it not plain, that not one man out of a million could be capable of doing this? and that of course the manufacture there would be totally destroyed, although the power of sending his goods to a foreign market remained the same as before?

Such are the unsurmountable obstacles that lie in the way of a farmer in an unimproved country, who has nothing but commerce alone
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to depend upon for providing a market for the produce of his farm.

No earthly method therefore remains for encouraging agriculture where it has not yet reared up its head, that can be considered as in any way efficacious, but the establishing proper manufactures in those countries you wish to encourage; or bestowing the most liberal encouragement to corn-merchants to settle in it; which although it would be of some use, is far less beneficial than manufactures. So that I now return to the same point where I ended my last letter,—and proceed to make some remarks on the nature of sheep and wool.

Few animals are of greater utility to man, or have been less attended to in general by modern nations, than sheep. Certain peculiar notions prevail with respect to the management of this valuable animal in every particular district, which have been adopted no body can tell how, and are adhered to with a blind perseverance, that but ill accords with the idea we are taught to entertain of the liberal turn of mind of modern improvers. And as these opinions influence the practice of the greatest part of the sheep-breeders in Europe, it is of consequence

sequence to examine them with attention, in order to rectify the abuses that may have been thus introduced into practice; and to encourage those to begin to make improvements in this respect, who have hitherto been deterred from attempting it, by the dread of the evils they were threatened with by these false theorists. And as I have bestowed a more than ordinary share of attention on this subject, I shall hope to have your excuse if on this occasion I endeavour to investigate it with a scrupulous degree of precision.

IN the course of this investigation you may naturally expect to meet with some things that will have a little of a paradoxical appearance; as contradicting directly several opinions very universally received. But I make no doubt that you will, with calm impartiality, weigh the arguments that may be produced in defence of these opinions: and if you should find any of them unsatisfactory, be so kind as to communicate your opinion on these heads with freedom, that I may have it in my power, either to convince you by more conclusive arguments, or to retract my opinion where it may chance to be erroneous. For you know I am no advocate for infallibility in man; or at least have not yet attained

attained that high degree of eminence as to be intitled to claim it for myself.—I enquire with candour and, deliver my opinion with freedom; but I have no party to serve, nor any theory to defend.

I FIND it has long been a prevailing opinion, that richness of pasture*, and temperature of climate, have a great tendency to improve the quality of the wool of sheep: and that fine wool cannot be produced but in countries that have been improved by sowing artificial grasses, turnips, &c; on which account it may be imagined that no good wool could be produced in the high lands of Scotland. But, upon a careful examination, I have not met with one fact that tends to prove, that rich pasture improves the *fineness* of the wool, although I have met with a hundred vague assertions to that effect.

IF with a view to ascertain this fact, we attend to the nature of the places that are well known

* The reader will find, that I have been here obliged to repeat some of the arguments enumerated in the Essays relating to agriculture and rural affairs. The subject here necessarily required that these should not be omitted; they make, however only a small part of what is here mentioned about sheep and wool.

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to produce the coarsest or the finest wool, we shall not find that either of these peculiarities have any necessary connection with the richness of the pasture.

THE finest wool in England is produced about Leominster in Herefordshire, the south downs of Sussex, and on Cotswold downs in Gloucestershire; yet it is well known, that in neither of these places is the grass remarkable for its richness. The latter, especially, is a bleak situation, where no sort of improvement has ever taken place.

THE other places in England remarkable for the fineness of their wool, are the isle of Wight, Romney-marsh, and Lincolnshire. Now although it is allowed that Romney-marsh affords exceeding rich grass, and that in both the other places there is abundance of very good pasture; yet a great part of the sheep-walks in both these places afford but very indifferent pasturage.

If rich grass makes valuable wool,—whence comes it that no other places in England can equal the places above named in this respect? for as good mutton is produced in almost every other county.

IN Buckinghamshire their sheep are among the largest, and their mutton the fattest in England; yet the wool of that county is of the very coarsest quality.

THE rich pastures of Holland and Germany, likewise nourish abundance of sheep, and yield mutton as good as can be found in any part of the world; but their wool cannot be compared with ours: while the barren mountains of Leon and Asturias in Spain nourish great flocks of sheep that yield the finest fleeces in Europe.

FROM this review it would seem that the nature of the pasture has but little influence on the fineness of the wool; and that therefore we ought to attribute the peculiarities we meet with in this respect to some other cause.

IT was in consequence of the following accidental experiment that I was led to make the foregoing observations.

A FARMER of a more enterprising spirit than ordinary, with whom I was intimately connected*, having been dissatisfied with the quality

* My own father, who died when I was but a child.

of the wool that his sheep afforded, put away his whole flock, and supplied himself with some fine-woolled English sheep in their stead.

It happened that the only walk he had for his sheep was a common, on which he and a neighbour-farmer had an equal right of pasturage. And as it was not of great extent, they employed one shepherd to keep both their flocks, so that his sheep were intermixed with those of his neighbour. And although the rams were common to both flocks, yet, merely in consequence of the difference in the ewes, the wool of the one part of the flock continued to be sold at more than 25 per cent. dearer than the other, at the distance of thirty years from the time they were first brought to the common.

THIS is a fact that I have particular reason to know for a truth; and seems to prove, in a very satisfactory manner, that the nature of the pasture, whatever effects it may produce in other respects, has but a very small influence upon altering the quality of the wool.

It is likewise worth remarking, that in the
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year 1666, the English having prohibited the importation of live cattle from Ireland, the inhabitants of that country were obliged to turn their attention to the rearing of sheep. A breed of the valuable sort was in consequence of this transported from England; which have thriven so well, and continue to afford such fine wool, as enables the Irish to rival the English in some of their finest woollen manufactures, particularly poplins and crapes; which has obliged the English, ever jealous of any rival in this their favourite manufacture, to cramp them with such prohibitory laws as prevents them in a great measure from vending these any where out of their own country. So that we see there is little reason for believing, as is commonly with confidence asserted, that the fineness of English wool is entirely owing to the peculiar richness of their pastures.

It is likewise well known, that the shire of Galloway at present produces finer wool in general, than any part of Scotland; which is entirely occasioned by a breed of English sheep, that were introduced into that country about fifty or sixty years ago, by Mr. Heron (as I am told), which has improved the wool to the degree for which it is at present remarkable. For

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before that it was in no respects better than the other wool of the country *.

I MIGHT add many other observations tending to show, that improvements by artificial grasses, turnips, &c. do not tend to produce any alteration on the fineness of the wool of sheep fed upon them: but fearing that you may be already tired of this subject, and wishing rather that you should satisfy yourself as to this particular, by attending to such circumstances relating to this as may for the future fall within the reach of your own observation, I shall not longer insist upon it at this time.

It is, however, very necessary for me here to remark, that although it seems evident, that richness of pasture has no effect in altering the fineness of the staple of wool; yet it is certain, that unless a sheep shall have as much food as is necessary to keep the animal at all times in perfect health, and good plight of body, the good-

* Hector Boethius, who takes notice of the fineness of the wool of several other parts of Scotland in terms of the highest applause, mentions that of Galloway as under: "Annandale, Niddesdale, and Gallawaie, beside fine wool and store of cattle, doth also abound with all kinds of grain, wheat only excepted. *Holingshead's translation*, p. 9.

ness of the wool in other respects will be considerably impaired. For it is an undoubted fact, that a poor diseased sheep never produced a fleece of wool of the best quality; as, in these cases, however *fine* it may be, it is hard and dry, and wants that softness and strength which is so essentially necessary for rendering the wool pliable in working, and durable in wearing.

IN this sense, therefore, richness of pasture may have some effect upon the *quality* of the wool; because in *feeding* countries the sheep are always kept in very high condition, which is not always so much attended to in *breeding* countries. But this inconvenience may in every case be avoided even in these countries, by taking care never to overstock the pasture. For if this is attended to, no animal will continue longer in good health on poorer fare than a sheep.

ON this account also it is of great consequence to guard against an accidental temporary want of food, from the long continuance of a storm of snow in winter: for if the sheep should be then too much stinted in this respect, the wool which grows at that season will be so tender, as to break through at that place much more readily

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readily than any where else, so as to become incapable of being properly manufactured. The wool-buyers, though ignorant of the cause of it, are well acquainted with this defect in the wool; and therefore never fail to try its strength between their hands at buying, and if it break with much ease about the middle, it is rejected.

As this must always be attended with loss to the farmer, and the inconveniencies that he must feel in other respects from this temporary want of food are very great, it behoves every considerate farmer to guard against it with the most anxious solicitude. In most situations this may be done by providing a stock of hay for that purpose: A thing but too little attended to by most of the sheep-raisers in Scotland, which tends greatly to impair the quality of our wool, so as in many cases to render the manufactures made of it not only less beautiful to look on, but also less durable in the wear, than they otherwise would have been.

In most situations this inconvenience may be guarded against by providing a moderate stock of hay to be set apart entirely for this use; and in some situations turnips may be provided for this purpose. But an easier method of effecting this end in a great measure, especially in mountainous

mountainous countries, is to propagate abundance of whins (furze), which, if sowed upon high and exposed situations, will there be in little danger of ever being entirely covered with snow; and will afford the sheep at all times during the winter-season abundance of the most wholesome green food, when all other plants are withered and insipid. It likewise affords a comfortable shelter from the wind, from whichever quarter it may blow: A circumstance that those who live in a sheep-country well know to be of the utmost importance to the well being of this useful animal at all times, but more especially in the spring, when the lambs are young and tender, which are allowed to bask themselves and *batten* * in the sun, when, without its assistance, they would be shivering with cold, or pining with misery. And as this plant blossoms very early, and produces flowers in prodigious abundance, it furnishes likewise a ready food to the lambs, that they seem to be fonder of than any other, by the help of which they live more comfortably, and can be reared earlier in the season than they could be by any other means. This

* A word now obsolete, that is so expressive as to compel me to use it on this occasion. It means that kind of fattening, or good plight of body, that proceeds from ease, and high enjoyment of health.

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plant therefore deserves to be cultivated with care by the sheep-breeder, as a precious blessing that Heaven has put at all times within his power to command.

You will perhaps be surpris'd to hear me speak with so much warmth in favour of a plant that has been often proscribed by writers on agriculture as a most pernicious weed. But although it may be justly deemed such in some situations, it is in others, as I have said, a most inestimable blessing. All quadrupeds during the winter-season seem to prefer it to almost any other food, and may be nourished upon it to the greatest perfection. Its prickles prevent horses or cows from browsing upon it readily until it is bruised ; but when it is thus prepar'd, they are greedy of it to a degree that is scarce conceivable. I have seen horses which had once tasted it, neighing in their stalls for want of it, when their racks were filled with the best hay ;—and when corn and bruised whins have been offer'd to them, they have left the former, and consumed the latter with the greatest keenness. And I have known instances where horses have been nourished by this alone for months together, although hard-worked all the time, that have fallen off in flesh

and spirits when they were afterwards put upon hay and oats.

BUT however valuable it may be for these animals, the difficulty of gathering and preparing it for them is so great, as to prevent it from ever being of very extensive utility with regard to them: but as sheep can easily be brought to nip off the single prickles one by one, they can be fed upon it without any trouble to the owner; and therefore it ought always to be provided as a winter-food, without even regard to the consideration above mentioned. In summer the juices of this plant become less palatable to most animals, and therefore they will at that season prefer succulent grass to it if it is at their command.—But even then it is preferred by them before coarse grass, or heath (ling) of any sort. So that wherever the fields abound with this last plant, it would always be a very great improvement, to substitute this more valuable one in its stead, as there can be no doubt but the same field, when filled with whins, would maintain at least three times as many sheep as if it were covered with heather.

CONSIDERING it therefore in this light, it must be deemed a lucky circumstance for the farmer

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farmer that it admits of being so easily propagated: For the seeds of it, if scattered on any bare piece of ground, at almost any season of the year, will not fail to come up, and thrive in any soil that is dry; for wet is its only unconquerable enemy. But where the earth is covered thick with heather, it is only necessary to turn up a spadeful of earth where you wish a bush to grow, and strew a few seeds upon the new turned up mold, which will quickly germinate, and advance without any further trouble or care.

IN this manner might very extensive tracts be quickly filled with this plant, which would not only tend to beautify, but highly to improve the country where extensive heather moors abound. As it continues to propagate itself wherever it is once established, there is no danger that ever it would stand in need of being renewed.

I THOUGHT the knowledge of these circumstances relating to this plant would be agreeable to you, as I imagine they will at least have the advantage of novelty to recommend them. But as I suppose you are heartily tired of this very long letter, I shall relieve you for the present. In a short time, however, you may expect to have some observations on the influence of climate upon the quality of wool.—Till then adieu.

...that it is a matter of being in early preparation. For the sake of it, it is better to be prepared at all times, at least in any case, well not fail to count up and think in any case. This is true, for we have only one opportunity. But when the time is over, it is too late. It is only necessary to put a little of this into your mind, and you will find it easy, and they will find it easy to do. It is a matter of being in early preparation, and it is a matter of being in early preparation.

In the present, it is a matter of being in early preparation. It is a matter of being in early preparation, and it is a matter of being in early preparation. It is a matter of being in early preparation, and it is a matter of being in early preparation. It is a matter of being in early preparation, and it is a matter of being in early preparation. It is a matter of being in early preparation, and it is a matter of being in early preparation.

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OBSERVATIONS

ON

NATIONAL INDUSTRY.

LETTER FIFTH.

OBSERVATIONS CONTAINING

Disquisitions relating to sheep and wool continued.—Of the influence of climate on the quality of wool.—Warm climates have been often imagined most favourable for producing fine wool:—Hence it has been concluded that fine wool could not be reared in Scotland.—This opinion is erroneous,—as experience shows that very fine wool has been produced in Scotland,—exemplified by an anecdote of Marshal Keith,—by the testimony of the author of the *Atlas General*, by that of Hector Boethius,—by a letter written in the year 1774,—by various well-authenticated facts collected by the author.—Unprejudiced reason would make us expect to find fine wool only in cold climates.—This opinion confirmed by experience, resulting from an extensive survey of this globe, and a minute attention to the nature of the climate of all those places where fine wool is produced.

OBSERVATIONS

NATIONAL INDUSTRY.

LETTER FIFTH.

TO MR. ***** LONDON.

DEAR SIR,

September 26, 1775.

IN such northern climates as ours, we so often experience the hurtful effects of cold, and feel in such a powerful manner the beneficial influence of heat, as makes us have a partial fondness for warm regions, and imagine that the meliorating influence of the climate is extended to almost every thing that is there produced.

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It has probably been in this manner we have first adopted the opinion, that the wool produced in warm regions was necessarily of a finer quality than that which is found in colder climates. But as it is of great importance to have this fact ascertained with certainty, it will not be right in us to acquiesce in this opinion, till we see if it is supported by experience or sound reasoning.

THE prejudice is in general so strong against the opinion, that very fine wool can be produced in cold climates, that I shall not be much surprised if you should find yourself at first disposed to doubt the truth of the following anecdote, which I had from a gentleman of undoubted veracity, and is indeed so well known by thousands in this neighbourhood that nothing can be ascertained with greater certainty.

ABOUT the beginning of the late war, the magistrates of a considerable town in the north of Scotland, famous for its manufacture of worsted stockings, desirous to express, in some measure, the esteem they bore for their countryman the late Marshal Keith, resolved to make him a present of a pair of stockings of their own manufacture, of an uncommon degree of fineness.

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fineness. With this view they commissioned from London some of the finest wool that could possibly be found; without any limitation of price. In consequence of which, some pounds of the very finest Spanish wool, picked out by very good judges of this matter, were sent to them.

WHEN it arrived, the magistrates sent for the women who were to manufacture it; and having told them what they wanted, showed them the wool they had got for that purpose. But when the women had examined it, they complained of its quality; saying it was so coarse that they could not undertake to draw above *forty beeres* * from the pound of it; but added, that if the magistrates would wait till the *Highland* wool came to their own market in the month of June, they would there pick out wool for themselves, that they would undertake to spin to the fineness of *seventy beeres* from the pound.

As they were entirely unanimous in this opinion, the difference appeared so very great,

* *Heere* is a term in the manufacture of yarn denoting two *cuts*, each cut containing 120 threads, each thread measuring two yards and a half. A *heere*, therefore is a thread measuring 600 yards in length.

that

that the magistrates agreed to their request, and waited till the Highland wool came to market; where the women provided themselves with wool that they spun to the fineness they had promised. The stockings when finished were valued at upwards of five guineas the pair, having been so fine that they could be with ease drawn through an ordinary thumb-ring together, although they were of the largest size. They were sent in a box of curious workmanship to Marshal Keith, who thought them such a curiosity as to be worthy of the acceptance of the Empress of Russia, to whom he afterwards presented them.

This fact happened not many years ago, and can be authenticated by thousands of witnesses now alive, should it be judged necessary; and proves in a very satisfactory manner that the Highlands of Scotland are capable of producing as fine wool as is perhaps to be met with in the world.

Now is this the first fact upon record that points out the fineness of the Highland wool.—For it deserves to be remarked, that the author of the *Atlas-General*, a book published above forty or fifty years ago, when enumerating the several manufactures

manufactures in Scotland, observes, "They make worsted stockings at Aberdeen from ten to thirty shillings per pair. They are spun of *fine wool from the Highlands*; and so much valued, that mens stockings of that sort are sometimes sold at fifty shillings or three pounds per pair*.

THE

* Since writing the above I have been at pains to make particular enquiry about the fine woollen manufactures of Aberdeen,—and have learnt the following particulars, that may be relied upon with certainty.

The late Earl of Aberdeen bought a pair of woollen hose at Aberdeen when he was married, about the year 1707, for which he paid 4l. 4s.—He afterwards gave them in a present to the Earl of —, his father-in-law, as a curiosity.—This fact I learnt from a very old man, still alive,—who was his Lordship's principal servant at the time,—who bought the stockings, and paid for them.

A lady of the strictest honour and veracity assured me, that a person with whom she was intimately acquainted, and nearly connected, was in the practice of manufacturing fine woollen hose, that were often sold from two to five guineas per pair; and that she had particular reason to recollect, that about the year 1733 one pair was sold to Mr. George Keith, advocate in Aberdeen, for either 5l. 5s. or 5l. 10s. she does not with certainty recollect which, but rather thinks it was 5l. 10s.

Being interrogated as to the wool of which these were made, "she is certain that *the finest stockings were made of Highland wool bought at the cross of Aberdeen.*"

Another lady, who was also intimately acquainted with some of the persons who were in the practice of manufacturing very fine hose, being interrogated as to the fineness of the yarn of which they were made, returned this answer:

THE wool of Scotland seems to have been remarked for its fineness in some particular districts at a much earlier period: for Hector

answer:—"I remember *she* (viz. the person who manufactured the fine stockings) told me, *she* had some more than an hundred barres from the pound:" so that a pound of wool was drawn into a thread of upwards of 60,000 yards (about thirty-four miles) in length,—an astonishing degree of fineness.

The same lady being interrogated as to the wool, made answer,—"*I am certain it was Scots wool.*"

The same lady proceeds, "I likewise remember to see three pairs of woollen gloves for Lady Mary Drummond, one of the Duke of Perth's family, for each pair of which she got three guineas. And that afterwards Lady Mary sent for as much yarn as would be a pair, and also for some of her knitting-wires," &c.

I have heard of many other persons whom I could name, were it necessary, that were then in the practice of manufacturing hose, at two, three, or four guineas per pair,—*all of Scots wool.* Nor is this art entirely forgot yet, although much neglected of late: for there were at one time within these few months past no less than six pairs of stockings, in the shop of Mr. James Burnet clothier in Aberdeen, that were sold for two guineas a-pair.

It may likewise be of importance to remark, that the wool of the sheep in the Zetland isles is so very fine that a great many pairs of hose are annually manufactured of it, and sent to market, and sold at ten or twelve shillings a-pair.—The filaments of the best Zetland wool are much finer and softer than Spanish wool.—In colour and softness it in some measure resembles Vigonia wool;—but the poor people there are so ill acquainted with the proper manner of sorting wool, that the coarse parts of the fleece are never thoroughly separated from the fine, which makes their manufactures much less valuable than they would otherwise be.

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Boethius, who was a professor in the university of Aberdeen, and wrote about the year 1460, as quoted by Hollingshed in his Scottish Chronicle, p. 12, says, that "Buchquhane (now "Buchan, a district of Aberdeenshire) is a very "valuable soil for all kinds of cattle, but especially sheep, *whose wool exceedeth that of the "like beast of all other countries thereabouts, for "whiteness and fineness."*

BUT as this only marks the proportional degree of fineness of the Buchan wool when compared with other places around it, some may think it indicates not any uncommon degree of fineness when compared with England or other places. He adds, however, a little afterwards, "There is also in this county (Angus) one "place, called *the Vale of Esk*, whose sheep "have such white, fine, and excellent wool, as "*the like of it is hardly to be found again within "the whole island.*"—And as England was at that time remarkable for producing wool of as fine a quality, at least, as any in Europe; if we should even allow for a small degree of exaggeration, we shall be obliged to acknowledge, that there is reason to conclude, that very fine wool was produced in different places of the north of Scotland at that time.

THE foregoing facts are still further confirmed by the following extract of a letter to Mr. David Loch, dated October 5, 1774. "As to the quality of some of the wool bred on the west coast of Scotland, I can with certainty say, that it equals that of Spain: for by a comparative trial I made some time ago, by bringing some of it from sheep killed for my own use, I carried it to Mr. Alexander Smart at Musselburgh; who compared it with his Spanish wool, and said it was equal if not superior to any he had ever seen from Spain; and begged me to procure a quantity of it for him: but his death, which happened soon after, put an end to the scheme."

"HOWEVER, though I did not bring wool, I brought worsted which was manufactured here, and much admired by the manufacturer for its softness and strength; who begged to have some of it sent, though at an advanced price."

THESE are facts which prove in a very satisfactory manner, that Scotland did formerly produce, still does, and may continue for the future to produce wool of an exceeding fine quality.

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NOR would we perhaps have deemed this a circumstance of such an extraordinary nature; had not our minds been prepossessed with an undue bias in prejudice of northern climates. For if we had reasoned from analogy, and judged of the effect that it might have been expected cold would have had upon the wool of sheep; by what it is known to have upon the furs of other animals, we would have been led to expect that the finest wool could only be produced in the coldest climates; as it is well known, that cold climates alone are naturally fitted to produce, and rear to the utmost perfection, animals bearing warm furs; the fineness and closeness of which are always in proportion to the coldness of the climate, nature having thus provided for the inhabitants of these cold regions a plentiful supply of those materials which are best suited for defending them from the rigours of the season; while the inhabitants of warmer regions are blessed with the more delicate silk-worm, which affords them materials for forming vestments more suited to their wants. Now, as the sheep is evidently an animal of this class, and its wool the most plentiful and beneficial kind of fur, we ought naturally to have been led to expect, that, like every other kind of fur, it would have

been

been closest and finest in cold regions, and in every other respect more valuable than that which should be produced in warmer climates.

It is, however, sometimes dangerous to trust too implicitly to reasoning *a priori*; but it is always of use to attend to the hints that may be suggested by that means, so far at least as to be certain that any opinion that may seem to run counter to it has been adopted only in consequence of experience and accurate observations. Let us try how far this will hold good in the present case.

WITH this view, let us take a more extensive survey of the globe than we have yet done; and remark the nature of those places where different kinds of wool are produced: for as there are particular places even in tropical regions that are extremely cold, unless we take care to distinguish these, we can form no proper judgment as to this particular from the latitude of different places. The Andes in America, although directly under the line, are perpetually covered with snow*; and every moun-

* "Both parties," says Don George Juan, speaking of himself and his companions, "when upon the hills near Quito,

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mountainous country experiences a degree of cold in proportion to its height, in whatever latitude it may be placed. The peak of Teneriff is as perpetually covered with snow as Mount Hecla ;

" Quito suffered not a little from the severity of the
" cold; which was the more painful to us, as we had
" been but little used to such sensations. Thus, under
" the *Equinoctial*, where it was natural to fear we had most
" to apprehend from heat, our greatest pain was caused
" by the excessiveness of the cold. Though our hut was
" small, and crowded with inhabitants, besides the heat
" of the lamp; yet the intenseness of the cold was such,
" that every one of us was obliged to have a chaffing-dish
" of coals. It may easily be imagined what we suffered
" from the asperities of such a climate. Our feet were
" swelled, and so tender, that we could not even bear
" the heat; our hands were covered with chilblains; our
" lips swelled and chapped, so that every motion in
" speaking, or the like, drew blood, &c.——While we
" were eating, every one was obliged to keep his plate
" over a chaffing-dish of coals, to prevent his provisions
" from freezing. The same was done with regard to
" water." Book 5. chap. 2.

Again he observes, Book 6. chap. 7. " Some of these
" mountains seem as if were founded on others, and
" rise to an astonishing height, which are covered with
" snow even to their summits. The Parama of Assuay
" is not of this class. Its height is the degree in this cli-
" mate where a continual congelation commences; and
" as these mountains exceed this height, so they are
" perpetually covered with ice or snow; and from a de-
" termined point above the surface of the sea, the
" congelation is found at the same height in all the
" mountains," &c.

Hecla; and the mountains of Ararat are equally buried under ice as the Alps of Switzerland.

THIS being premised, we need not be surpris-
ed if we should meet with fine wool in regions
of low latitudes, even although it should be
certain that a considerable degree of cold should
be necessary for producing it. And in fact it
seems to be a rule without exception, that no
fine wool is produced in any southern climates,
unless in countries remarkably mountainous
and cold.

THUS, in Africa, we find, that about Mount
Atlas, and along the northern parts of that
large peninsula, some wool is produced, which,
although of a much coarser quality than that of
many places in Europe, is fine in comparison of
any wool that grows in the more southern parts
of Africa; the sheep of these regions yielding
only a thin coat of a particular kind of wool
as coarse as goats hair. Nor is there any place

The same might be remarked of every mountain on
the globe, with this only difference,—that under the line
from the little variation of the seasons, this point of con-
gelation remains nearly at the same height at all times;
whereas, in higher latitudes, it varies greatly at different
seasons of the year.

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throughout the whole torrid zone where any tolerable wool is produced, except on the Andes of America; on some parts of which the sheep originally sent from old Spain continue to carry very fine wool, as well as the native sheep of the country called *Lama's*, *Paco's*, and *Vicunna's*. But all of these feed in the mountains, where the cold is as intense as in any habitable part of Europe*.

IN Asia,—there are some parts of Persia, and the province of Cashemire in the northern parts of Indostan, which afford wool of perhaps the finest quality of any in the world. But the sheep that yield the fine Persian wool are kept upon the bleak mountains of Armenia the greatest part of the year, whose tops are continually covered with snow †; and the Cashemi-

* In the district of Lipes in Peru, Ulloa observes, that "l'air y est tres froid, & le terroir n'offre que des parages ou l'on nourrit de grands troupeaux de vicunas, d'alpacas ou tarugas, & de Lamas, animaux assez communs dans les hautes montagnes, où le froid est continu." Prev. Coll. Voyag. t. 13. p. 315.

† Tavernier speaking of mount Ararat says, "Elle est comme detachée des toutes les montagnes de l'Armenie, qui font une longue chaine, et depuis le milieu jusques au sommet elle est continuellement couverte de neige." t. 1. p. 43.

rian wool grows on those cold mountains that divide that province from Thibet, where the cold, according to Bernier, is so intense as to keep the country continually frozen for near one half the year*.

SINCE, then, we find, that no fine wool is ever produced in warm climates, excepting in such districts of these as are remarkable for their intense degree of cold, it would seem that experience, as well as reasoning, points out in the strongest manner the bad effect of heat in this respect, and ought to compel us to rest satisfied, *that a cold climate is best for producing fine wool.*

* He says, it is a miserable country, covered with snow during five months of the year; and that the only commerce of the country is for musk, chrystal, and jachem: "Mais sur tout de laines, les unes des brebis (qui est plus fine que celle d'Espagne), les autres qui nomment *toux*, et qui approchent plutôt du poil de castor que de laine." t. 1.

He further adds, that the natives manufacture their wool into a kind of cloth called *chales*, consisting of a yard and a half in length. The finest of these that are made of sheep's wool, sell at the highest for fifty rupees, (6l. 5s.); whereas those that are made of the fleece of the *toux* sell for a hundred and fifty, (18l. 15s.)

L'Abbé Raynal says, that they manufacture of the same fine wool turbans for the omrahs and other grandees, of a yard in breadth, and somewhat more than three yards in length, which sell from 2400 to 3600 livres a-piece; that is, from about 100l. to 150l. Sterling. Hist. Philos. t. 2. p. 31.

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THESE facts seem to be conclusive as to this particular; but the foregoing reasoning acquires a still more incontestable degree of evidence from the concurring testimony of all our navigators who have occasion to sail to warm climates, who invariably assert, that the sheep which they carry with them from Europe for live stock, lose their fleeces in these warm regions, which they never again recover till they are brought into a colder climate; and that, instead of wool, there grows upon their bodies, in these warm climates a thin coat of a particular kind of hair, hardly at all resembling wool, exactly like that which grows upon the native Guinea sheep.

THIS is a fact so universally well known and acknowledged for a truth by every one who has been either in the East or West Indies, as ought assuredly long ago to have destroyed the vulgar prejudice in favour of warm climates with regard to the production of fine wool, were not mankind in general more disposed to acquiesce in any opinion that may be first suggested to them, than be at the trouble of exercising their reasoning faculties in a road that has not been smoothed by others*.

I HAVE

* Since writing the above, I have been assured by a gentleman of the strictest honour and integrity, who lived long

I HAVE purposely declined taking any notice of the peculiar mode of management of their sheep in Spain, till you should be made acquainted with these facts, as from a knowledge of these you will be enabled to discern clearly the utility of the practise that in general prevails in Spain with regard to the management of sheep; and to explain the reasons why in a country, many parts of which are warm to a considerable degree, they have been able, for so many ages, to prevent their wool from degenerating.

long in the West Indies, that he has seen hundreds of sheep that had been brought at different times from Europe, which have been kept in these islands for years together, and always yielded the thin kind of hair above described instead of wool, so long as they remained there. He added, that these sheep are sometimes brought back to Europe by way of live stock, or for the sake of their milk; and being usually very lean before they arrive, they are sometimes put ashore in Britain to get into flesh before they are killed: but when they arrive, they have so little the appearance of any European animal, that they are usually called by the vulgar *West-Indian deer*.

In a short time, however, they lose that shaggy hair,—their fleece of wool begins to grow upon them, and they quickly become in every respect the same as the other sheep of the country from whence they were originally carried.

After having written the above, I showed it to the gentleman to whom I formerly alluded; who made the following observations upon it, which I have his permission to insert in his own words.—“If (says he) the author has no other authority but mine for all that is here said

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generating. But that you may be allowed to amuse yourself with your own conjectures on this head for some time, I shall reserve it as the subject of another letter; which will not perhaps be the least interesting of this whole series.—I am, &c.

of such sheep, some abatement must be made from the account given of them. What I know about this matter and what I am ready to vouch, even upon oath, is as follows. I have seen in the West Indies several sheep with hair rather than wool, somewhat like goats hair, and was credibly informed, so that I had no reason to doubt, they were brought from England. Again, after my return to London, I was credibly informed, that such sheep being brought back, and put into the fine pastures on the banks of the Thames, recover their wool, and become again like other sheep.—I have heard too, that while they are in their shabby state, the vulgar call them *Indian Deer*. I not only firmly believe all this to be true, but am also fully convinced, that, upon enquiry made about it in London, the fact would be as well attested as any other fact whatsoever.

“It is very penal to export sheep from England; therefore I can hardly think that many are exported, unless for great profit, to France, or some other country in Europe. I must add, that there are many thousands of sheep in the West-Indian islands and continent, which, it is well known, came all originally from Europe, and have hair instead of wool. Of these I have seen no doubt many hundreds. So far I could and would say upon the most solemn examination in the highest court upon earth; and this I think is enough for your argument.—I have seen goats at sea for the sake of their milk, and believe it very common, but never any sheep for that purpose.”

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OBSERVATIONS

ON

NATIONAL INDUSTRY.

LETTER SIXTH.

C O N T E N T S.

- [Disquisitions relating to sheep and wool continued.—
Of the management of the sheep in Spain.—The
fineness of their wool is to be chiefly ascribed to their
perambulations there,—exemplified in the sheep of An-
dalusia, which do not migrate, and carry very coarse
wool.—A temporary heat at any particular season of
the year, renders the wool that is produced at that
season greatly coarser than what grows upon the same
sheep at other colder seasons,—proved by a series of
experiments and observations on wool by the author.
Inferences—farther confirmed by experience.—Anec-
dote of Earl Marischal relating to Siberian lambs wool.
—The climate of Great Britain more favourable for
the growth of wool than any other in Europe.

OBSERVATIONS

ON

NATIONAL INDUSTRY:

LETTER SIXTH.

TO MR. ***** LONDON.

DEAR SIR,

October 2, 1775.

THE earliest records we have of Spain mention their wool as particularly fine*; and as it was a considerable article of commerce, it has probably

* Strabo mentions fine wool as one of the principal articles of commerce carried on from Spain; and speaking of *Turdetania*, one of its provinces, now a part of Portugal, he has these words. "Frequens inde primum vestis veniebat, nunc vero *Coranorum* amplius lanificium excellens
"tissimæ

probably at all times obtained a very particular share of their attention. But when the Moors, in the eighth century, over-ran that country, and drove the natives to the mountains in the northern parts of that kingdom, their monarchs themselves might be said to be little better than shepherds; and the produce of their flocks was, in all probability, their only revenue. And even after the Moors were gradually forced to retire, this seems to have continued long a very considerable part of the royal demesne*: for
till

"tissimæ pulchri tudinis, unde admissarii arietes talento emanantur." The *Coraxi* were a people of *Asia*. We may remark by this passage, that fine wool had been in very high estimation under the Roman emperors, as they gave such a high price as a talent, equal to 216l. Sterling, for a ram, for improving the breed.

* It is computed, that the number of sheep that formerly belonged to the crown amounted to five millions, which yielded such a considerable revenue as to give it a just claim to the title of *The precious jewel of the crown*, which the kings of Spain bestowed upon them in their ordinances. To take care of these, a royal council was formed, under the title of *The council of the grand royal flock*, which exists to this day; and the laws relating to sheep in Spain have been digested into one code, and published in a large folio volume, under the title of *The laws of the royal flock*, although the King has not now a single sheep.

Ustariz, a very well informed author, computes that the sheep in Spain do still amount to upwards of eight millions, which require forty thousand persons at least to
keep

till of late all the sheep of that country belonged to the crown. But in proportion as the mo-

keep them. His words are, "Para que veas quan grande
 " es el numero de gente, (his argument led him here to
 " take notice of the propriety of encouraging those occu-
 " pations that tended to produce active subjects to the
 " state), que se emplea en el penoso exercicio de guardar
 " el ganado lanar, dire, que en el cierto papel, que un
 " ministro de graduacion, inteligente, y digno de fe, me
 " comunicò pocos años hà, explicando los muchos mo-
 " tivos, que obligan a cuidar de su conservacion, y aumento,
 " se refiere que el ganado lanar *trasumante*, que se transfi-
 " ere todos los inviernos a Estremadura, llega a quatro
 " millones de cabezas; y que para el cuidado de 20th se
 " emplean 100 personas, poco mas, o menos, segun estan
 " unidas o divididas las dcheffas, lo que corresponde a
 " 20,000 hombres; y asegurandose por algunos autores,
 " que el numero de las ganados *estantes* (que son los que no
 " baxan a Estremadura), es mucho mayor, se puede creer,
 " que passaran de 40,000 personas que se ocupan en el
 " resguardo, y cuidado de los ganados *trasumantes*, y de
 " los *estantes*; y mucho mas en los tiempos presentes (this
 " was about the year 1740) en que aseguran los praticos,
 " haverse aumentado considerablemente, alli con el bene-
 " ficio de la paz, como por lo propicios, que estos ultimos
 " años han sido, para conservarlos, y acrecentarlos; lo
 " que se acredita tambien por el gran precio que las yervas
 " tienen oy en Estremadura. Theo: y pract. de com-
 " mercia, &c. par Ustariz, p. 21. ch. 11."

This is entirely exclusive of the sheep that remain always in the plains of Estremadura, &c. which seem to be omitted by him as of no value. If we suppose the fleece of one sheep with another to weigh only two pounds of washed wool, and that that is sold for 2s. 6d. per lb. the value of the wool alone will amount to upwards of one million Sterling; an article it will be allowed, of considerable importance.

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narch became more ambitious and needy, these flocks were gradually alienated, this being a ready mean of filling the coffers of every inattentive monarch.—This kind of traffic, however, could not long continue;—the whole flock was in a short time exhausted, and the last flock was sold by Philip I. to the Marquis of *Iturbleta*.

WHILE the sheep remained the property of the crown, they naturally obtained a very great share of the attention of the legislature.—Numerous laws were made for protecting the flocks, and regulating every circumstance relating to them, which have been since collected into a large folio volume, entitled, *the laws of the royal flock*. It was at that time that the regular subordination of shepherds that still prevails in that country was first established; and under the powerful influence of the King, private interest was made to give way to the conveniencies of the state, so as to remove every obstacle that might have interrupted those regular and extensive perambulations of their sheep, so necessary for the health of the flock, and preservation of the wool. But as you are perhaps unacquainted with the particular mode of managing

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managing sheep in that country, I shall endeavour briefly to give you some idea of it.

IN Spain it is not so customary to meet with small detached parcels of sheep, the property of private individuals, as in other parts of Europe. While they belonged to the crown, they were divided into large flocks, consisting of ten or twelve thousand each. Every such flock was governed by one chief shepherd, who had under him others of an inferior degree, who likewise had others under their command, in a regular gradation, as in the army. And like the army likewise they had power to punish trespasses among themselves, without being amenable to any other court. And as the sheep were disposed of in whole flocks, they could only become the property of great men who keep them still entire; so that the same laws and customs still prevail with respect to these as formerly. The flocks are nearly of the same size as of old; and the same *hierarcy* of shepherds is still continued.

THESE large flocks of sheep have each, by law, a privilege of pasturage in certain districts of the mountains in summer, and on particular parts of the low countries in winter, upon paying

ing to the proprietors of the ground a fixed price per head for that privilege. On this account they are obliged to travel regularly in the spring of the year from the low countries of Estremadura, Andalusia, &c. towards the mountains of Leon and Asturias, where they feed till autumn; and then setting out in a contrary direction, they as regularly return to inhabit the plains during the winter season: thus making twice a-year a journey of several hundred miles; the inhabitants of the countries through which they pass, being obliged at the proper seasons, to leave openings in their vineyards, &c. sufficient to give them a free passage without molestation.

THIS mode of management, although it may appear to us a little singular and unaccountable, has evidently been suggested to them by motives of convenience alone, and not from any capricious fancies on the one hand, nor on the other hand from any premeditated design of improving their wool. For as the mountains are covered with snow during many months in winter, when the vallies enjoy an agreeable temperature of climate, the sheep having had at that season no food in the mountains, while they could gather abundance in the low countries

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tries without doing any damage to the summer-crop, were sent to the valleys to reap the advantage of it: and in summer, when the low ground is covered with a crop, or parched up with the violent heats in these southern climates, they ascend to the mountains, and eat the fresh herbage that grows upon them at that season; which they could not get at in winter*.

AND as this practice was established by the influence of the crown, as the country was gradually recovered from the Moors, before individuals had acquired an idea of that stability with respect to private property that now so universally prevails in Europe, it continues still to be practised there; which gives to Spain one advantage in point of political œconomy over every other country in Europe, who might in vain

* A practice exactly similar in kind to that in Spain, and for the same reasons, takes place in some parts of the provinces of Roussillon and Languedoc in France, where the sheep are driven every winter from the plains of *Reveral* and *Salanque* to the neighbouring mountains of *Aspres* and the high *Constant*; and from the *Clape de Narbonne*, and the *basses Corbieres*, in Languedoc, to the mountains of *Cevenne*, and *Gevaudon*. But as the flocks are less numerous than in Spain, and more intermixed with one another,—the wool is not improved to an equal degree,—although the best wool of Roussillon is reckoned finer than the inferior sorts of Spanish wool.

now attempt to render a practice of this sort so universally prevalent as it is there already.

THIS practice has been attended with greater advantages to the state than the inhabitants have been aware of; as it has been, in all probability, the principal mean of preserving the wool of that country so long of such a fine quality; and of securing to it almost the only beneficial branch of commerce that they now follow. For as the sheep are always kept upon the cold mountains in summer, they never experience a degree of heat near so great as what is felt even in this island during that season of the year; and prodigiously less than in the vallies of any other country in Europe: which tends very much to give to their wool a superior degree of fineness.

By this practice, likewise their flocks being carefully kept from intermixing with one another, especially at the rutting-season, when they are in the mountains at a great distance from every other kind of sheep, the original breed is more effectually preserved from being debased by any of the bastard sort, than could possibly be effected in any country where property is more

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more divided, and flocks of different kinds more intermixed with one another.

AND if to these particulars we add, that the wool in Spain is almost the only article that brings any money to the owner of a flock, and that by consequence it must become a principal object of his attention to prevent it from degenerating, we shall not be surprised that this country has so long preserved a superiority over the neighbouring states in this respect; who have neither such conveniencies for pasturage, such means of preserving their race of sheep distinct from one another, nor such temptations to bestow their whole attention to the improving of their wool; as the carcase, in many cases, becomes an object of greater importance than the fleece.

THAT the wool of Spain would quickly become of as bad a quality as in other warm climates, were the sheep allowed to remain in the vallies during the summer-season, seems to be clearly demonstrated by this circumstance, that in the provinces of Andalusia and Estramadura there are some individuals who keep a few sheep for their own use, which remain in these warm places throughout the whole season,

whose fleeces, instead of being fine and silky like the others, are hard and coarse, more nearly resembling some kinds of hair than fine wool.

BUT that these regular perambulations of the sheep in Spain contribute in a very high degree towards the improvement of their wool, and that a temporary heat during the summer-season tends much to debase it, may be easily perceived by any one who will take the trouble to examine a fleece of wool of our own produce, which has been allowed to grow till it has attained its whole length; as he will immediately perceive, that the out-side, or that part of the fleece that grew upon the sheep during the summer-season, is much coarser than the inside of the fleece, that has been produced during the cold weather of winter: for, let him pull out any single filament of the wool, and he will find, that the end which adhered to the sheep is not in some cases perhaps one fourth part of the thickness of the other end.

THIS is a fact that all wool-sorters are well acquainted with, although few persons seem to have given themselves any trouble to discover the cause of it. But as it will afford us more light

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light in endeavouring to discover the nature of the wool produced in different countries, with the means they may have of improving the same, and consequently their fitness or the reverse for carrying on an extensive woollen manufacture with their own materials, than any other fact that I have hitherto met with, it is of great importance to examine it with all possible degrees of cautious circumspection. For as nothing can be a greater defect in the quality of wool, than this inequality in the size of different parts of the same filament; it being impossible in this case by any kind of sorting to separate the coarse from the fine, which must always prevent it from working kindly in any manufacture whatever; those nations which must of necessity be condemned to have all their wool with this defect in a high degree, will never be able to cope with another nation in the woollen manufacture, which is not subjected to this inconvenience.

ON this account I hope you will not think it impertinent, if I here relate, with a very scrupulous degree of precision, several observations that have occurred to myself, and experiments I have made, with regard to this subject; from which I hope you will with me be convinced, that

that the cause of this phenomenon needs no longer be esteemed doubtful.

It is some years since I first took notice of the above-mentioned fact; and having often had occasion to converse with people who had never observed it, I was on many occasions induced to show them some wool before they could be satisfied of it; so that I had many opportunities of seeing the experiment verified without having met with one instance in which it failed, or was in the least doubtful.

In the month of June of this present year 1775, I took some filaments of wool from a fleece lately shorn from the sheep, with an intention to show a friend the difference between the fineness of the root end and that of the top; but although there was a perceptible difference between them, yet I was a good deal surpris'd to find that this difference was far less than I had ever observed it before. At first I imagined that my former observations might perhaps have been erroneous, and that what I had imagined to be a general rule was perhaps only a particular exception, arising from some accidental unobserved cause; and therefore, with some degree of eagerness, examined several other fleeces; all of

of which I found to agree in this particular with the first.

At a loss to account for this singular phenomenon, I continued to reflect upon it for some time; and as I again and again examined with great attention the separate filaments of wool, I could not help remarking that the root-end of the filament was not the finest part of it, as I had till then imagined; but could plainly perceive, that it was sensibly smaller about a fourth or a fifth part of its whole length from the root-end than it was there; so that the whole filament was of unequal thickness in every part varying in this manner. At the point it was thicker than at any other place, from whence it gradually and slowly diminished for about three fourths of its whole length, from which it began, at first imperceptibly, but gradually more sensibly, to encrease in size as it approached towards the root-end.

This form of the filament soon satisfied me as to the cause of the phenomenon that had at first perplexed me, and at the same time afforded a very clear illustration of the great effect that the climate has upon the fineness of the wool. For it was here palpably evident, that
that

that part of the filament that was produced during the summer months, forming the points of the wool, was coarser than that which grew during the cold winter months, so that it gradually grew finer and finer as the rigour of the cold encreased, till about the month of February, when the cold is usually most intense in our climate; after which time the weather beginning to grow gradually warmer and warmer, the size of the filament is gradually expanded till the middle or end of May, when it was separated from the body of the sheep.

I WAS by this experiment furnished with a very satisfactory answer to an objection that had often before been made against the opinion I had entertained, that the cold of the season in which it grew, was the cause of the superior fineness of the roots in comparison of the tops of the wool; it having been often alleged, that it was possible this circumstance might rather be occasioned by the warmth that was produced near the skin of the sheep even during the cold weather, by the length and closeness of the wool so perfectly covering its body at that season. But had this been the case, the fineness must have gradually become greater and greater at the roots as the deepness of the fleece encreased, and

and of consequence the very root of the filament ought to have been the finest part of it.

THIS phenomenon appeared to tally so exactly with the idea I had preconceived, as to make me be afraid lest I might become the dupe of my own prejudices, which might make me imagine that I actually perceived things, that only existed in my own imagination; as has often happened with others in the same circumstances. But to guard against all danger of being imposed upon in this respect, I drew out some of the filaments singly; and having doubled them in my hand, held out the two ends to a person who knew nothing of my intention in doing it; and having asked which was smallest, the root-end was invariably made choice of as the smallest.

I THEN cut the filament at the smallest part of it as above described, and in the same manner presented an end of this smallest part along with that end of the filament that had formerly been the root; which last was as invariably pitched upon as the coarsest of the two.

THESE

THESE experiments I repeated frequently with five or six different persons, at different times; none of whom ever committed one mistake in chusing as above specified. From which I was perfectly satisfied, that my own observations had been entirely just; and that the inference I drew from thence could not be controverted.

It readily then occurred to me, that the smaller difference between the roots and the points of the wool shorn at Whitsunday 1775 than what I had ever before observed, was to be entirely ascribed to the peculiarity of the seasons for the year preceding that. For in this part of Scotland the summer 1774 was the coldest throughout that was ever known in the memory of man; which ought naturally to have made the points of the wool that grew in that season much smaller than usual. And as the spring 1775 was uncommonly warm, it was not at all surprising, that the difference between the two ends of the filament should be far less perceptible than usual. I have been told, that the season with you was nearly similar to our own: if so, you will perhaps be able to recollect it.

To

To satisfy myself, however, experimentally of the difference, in these respects, between the wool of this and the former year, I was at pains to procure some wool of last year's growth; and having compared some of the filaments of it with others of this year 1774-5, the following particulars were observable.

1st, THE difference between the point and the root of the filament of wool of crop 1773-4 was much greater than between the two ends of the filament that grew in the year 1774-5: And,

2^{dly}, THE difference between the root-end and the smallest part of the filament, was much greater in the wool of crop 1774-5 than in that of the former season. This was perceived and acknowledged by others than myself, as before, to prevent my being deceived.

THESE phenomena admit of as easy an explanation as the former; being the natural consequences of the two different seasons in which the separate filaments were produced.

For it is probable you may yet be able to recollect, that summer 1773 was very warm and comfortable.

comfortable, and the winter of the same year uncommonly mild; the spring of the year 1774 having been the coldest and most uncomfortable that was almost ever known.

HENCE the points of the wool were coarse, and the roots fine, to as great a degree as may ever be expected to happen in this climate; and as there was little variation between the temperature of winter 1773-4, and spring 1774 there was likewise little variation between the roots and the finest parts of the filament.

BUT as the heat of spring 1775 was greater than we almost ever experienced, the roots of the wool of that year's growth were uncommonly coarse, so as to differ much more than usually happens from the smaller parts of the filament produced in winter; which was probably the cause of my remarking it so readily that year, although it had always escaped me before.

I HAVE been thus particular in describing the phenomena observable in comparing the wool of these two different seasons, not only to prevent any mistakes that you might fall into
by

by making your observations on any wool that might fall into your hands, without paying attention to the nature of the season in which it may have been produced; which might make you imagine, the facts had not been by me fairly related, if the appearances should differ in some respects from those I have enumerated, owing to a variation of the season; but also to enable you to repeat these experiments yourself, if you should be so inclined, with pleasure and advantage, instead of perplexity and doubt that might otherwise have distressed you.

To verify these experiments in a still stronger manner, and give the observations a more incontestable degree of certainty, it readily occurred, that if the coarseness of the points of wool is to be ascribed entirely to the heat of the season in which it is produced, there must be a difference between the form of a filament of wool that has grown upon a lamb, and one that has been produced upon a shorn sheep. For as the lamb, is yeaned in the spring, while the weather is yet cold, if our observations have been just, the points of it ought to be finer than that part of the wool that grows during the warmer weather in summer.

To

To ascertain this particular, I examined some filaments of wool that had been cut from a lamb on the 15th of August this season 1775, and had the satisfaction to find, that this additional trial tended to confirm all the foregoing observations: for the roots of this wool were sensibly coarser than the points; which is directly the reverse of what invariably happens with regard to the wool of old sheep.——This experiment I also tried as before, by showing the two ends to different persons, none of whom ever committed a mistake.

From this experiment it also follows, that a filament of the wool of a sheep of the first shear, commonly called in England as well as Scotland *bog-sheep*, if it has not been shorn, will always be of a different form from that of a shorn sheep; as it will gradually encrease in size from the point till about the fourth part of its length from thence, after which it will as gradually diminish till within about a fourth of the root end; when it will begin again to expand till it arrives at the root altogether. On this account it is necessary, if you repeat the experiments, to take care that you do not get a *bog's* fleece instead of a shorn sheep.

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THESE experiments demonstrate in the clearest and most satisfactory manner, that heat at all times tends to render wool coarser in quality, and that cold to a certain degree is indispensably necessary for the production of fine wool; so that the opinion usually entertained on this head is directly the reverse of truth.

A NECESSARY inference that must follow from these premises, if our observations have been just, is, that those countries alone will be capable of producing wool of a very fine quality which are not only cold upon the whole, but as uniformly so throughout the whole season as possible.

ON this account we might expect, that the finest wool could be produced, with least trouble or care, upon the sides of very high mountains in the torrid zone; for as the heat in these latitudes is almost invariably of the same degree throughout the whole year, if the sheep are confined at a sufficient height in the mountains, they will there experience an uniform degree of cold from one end of the year to the other, without farther trouble or care. But small as this degree of trouble is, it has never yet been bestowed: yet, even without this, the sheep that

that were carried from Spain to the Andes of America, continue to afford in some places there as fine, or perhaps finer wool, than that of old Spain; although they are not there an object of any concern to proprietors, except on account of their carcase.

We would next expect to find wool of the best quality in mild uncultivated countries, where property was unfixed, and the inhabitants accustomed to an ambulatory life; as there they would always vary their habitations as the season required; ascending to the mountains in summer, to enjoy the coolness, and fresh verdure, that these afforded, and retreating to the vallies in winter, that they may shun the rigour of the season themselves, and find abundance of food for their flocks.—Such is exactly the conduct of the inhabitants of Persia, where the fine wool * before mentioned is produced. And

* Tavernier takes notice in many places of his journal of perambulations of this sort.—“A quatre lieues (says he, t. 1. p. 38.) de la ville (Erevan), vers la midi, il y a des hautes montagnes, où les payfans qui habitent les pays chaud du cote de la Chaldée, viennent, jusques au nombre de vingt mille tentes, c’est à dire de familles, chercher en estè le bon-paturage pour leur betail, et sur le fin de l’automne ils reprennent leur chemin a leur pays,” &c.

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although the natives of Spain have for the most part fixed habitations, yet we have seen, that the sheep and their attendants follow the same ambulatory life as in Persia, and these sheep afford wool nearer approaching to that than any other country in Europe.

IN northern climates, if property is much divided so as to prevent these extensive perambulations, little fine wool can be expected, except in small islands; and not even in these if they are in very high latitudes: because the heat of summer in northern countries becomes for a short time so intense, as must tend in a powerful manner to alter the quality of their wool in this respect. It is from this cause that the wool of the sheep in Iceland is extremely coarse on the outside of their fleece, while that part which adheres to their bodies is exceeding fine, as is remarked by Busching, vol. 1. p. 219. and other natural historians.

FOR the same reason we may expect, that the wool in Norway, Denmark, Sweden, and other northern continental countries, will be still more subjected to this inconvenience, unless the sheep be carefully driven to the mountains in summer; as the heat is then in these coun-

tries extremely intense.—Nor do we find that any fine wool has ever been produced in any of these regions.

WE are as yet so little acquainted with the internal state of Tartary, or the nature of things that are produced in it, that we have only room to conjecture what may be their state in this respect. But as the natives lead a wandering life, like many other Asiatic nations, and as the country is mountainous and cold for its latitude, we have reason to think that they might produce wool of a very fine quality. I know not if you will or will not admit the following fact as tending to prove the probability of some of the northern hordes having at present fine wool: but as it is curious, I doubt not but you will be pleased to be informed of it.

WHEN Earl Marischal was last in Scotland, a gentleman of my acquaintance who was on a very intimate footing with him, called on him one morning to breakfast; when he found his Lordship in his nightgown; which was lined with a kind of fur that caught the gentleman's attention. When the Earl perceived that he took notice of the fur, he came up to him, and asked if he knew what kind of fur it was: but the

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the gentleman having told him that he had never seen any of that sort before, nor could conjecture to what animal it belonged, his Lordship said, that the gown had been sent to him in a present by his brother Marshal Keith when he was in the Russian service, who had informed him, that the fur with which it was lined was *Siberian lambs skins*. The gentleman was a good deal surprised at this account, and examined the fur with attention. It was, he said, of a jetty black colour, and silky softness, exceeding close and warm; and was in his opinion the most beautiful fur he ever beheld. I give you the story as I had it, and leave you to credit it or not as you shall think proper. I, for my own part, should not be much surprised if some of the Tartar hordes, who border on Siberia, and range through all the northern provinces of Asia, should have sheep of that sort, the skins of which might sometimes find their way through Siberia to Russia *.

BUT

* In confirmation of this opinion, I find that Bushing mentions lambs skins with curled wool, as one of the articles of commerce carried on between the Tartar hordes and the Russians in Siberia, in the following terms.—
“The trade to Bugar, or Bochora, which brings in ready money, or by bartering of goods, *curled lambs skins*, Indian silks, and sometimes gems; which are brought to the

BUT however this may be, it is certain, that the difference between the heat of summer and the cold in winter is far less considerable in Great Britain than in any other country in Europe, which gives this island an undoubted superiority over all the neighbouring nations with regard to rearing of wool: A superiority of which we often vainly boast, but in other respects take little heed how to improve to the utmost: for which we are surely much to blame; as it is hardly to be doubted, that through carelessness the quality of our wool is gradually debasing, while that of our neighbours, by an opposite conduct, is as gradually improving.

NOR is the superiority that we enjoy from our situation so great as to put it out of the power of other rival nations, by a skilful management of their sheep, in time greatly to excel us, if we neglect to take care of ourselves. It behoves, therefore, not only the inhabitants of Scotland, but of England also, to bestir themselves in time, and by a due attention take care to ensure to themselves that superiority in

yearly fair of Samarkand." Busb. Geog. vol. i. p. 391.
 —But as sheep abound in Siberia, it is not probable that this article would have been mentioned unless they were remarkable for some valuable peculiarity. Probably this may be the very sort with which the gown was lined.
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the woollen manufactures which they have long enjoyed; but which, from many untoward circumstances, does not seem to be at present fixed on such a firm basis as many would fondly wish to persuade themselves it is. England has already reaped great benefits from the wool produced in it; but as Scotland has not yet been in any eminent degree benefited by her wool, it is of importance to discover the causes of it, which I shall endeavour to point out in another letter.

———In the mean time I remain &c.

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P O S T S C R I P T.

SINCE the above letter was written, I have continued my experiments on wool, one of which deserves to be here related.

IN consequence of the discovery that the wool which grew in cold weather was finer than that which was produced in the warm season, it occurred, that if a sheep should carry such long wool as to admit of being cut twice in one year, there would be a possibility of separating the coarse part of the filament from the fine, which might sometimes be attended with very beneficial consequences.

To try if this could be done with profit, I took two lambs that carried long wool, and on the 12th of August 1775 caused them to be clipped; and having taken a lock of wool exactly from the top of the shoulder of each, marked the lock of wool by a piece of paper, referring to a particular mark put upon each of the lambs so as that they might be exactly known, and with certainty distinguished from one another in the spring.

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IN the end of May 1776 these two sheep were again taken, and a lock of wool cut exactly from the same part of the shoulder from whence the former had been cut.—These were compared with the two former locks; when it was found, that the wool which had grown before August 1775, was twice as coarse at least, and much harder and drier, and more apt to fly about in separate filaments when working, than what had grown between August 1775 and May 1776. It was likewise remarkable, that there was little variation in the size of any part of each of these filaments, that which grew in summer being nearly of an equal coarseness in every part, and that which grew in winter being as equally fine.—The winter was not remarkably severe, nor the spring uncommonly hot.—These locks I still preserve, for the inspection of the curious.

FROM this experiment, besides a confirmation of the general theory above advanced, we may be able to draw some corollaries, that may perhaps be of use in practice.

COR. I. Those who have long wool, only fit for combing in its native state, may thus be enabled to obtain wool from their sheep that shall be very proper

proper for carding, as the wool of each cutting is only half its natural length. In the North Highlands of Scotland this practice of clipping their sheep twice a-year is pretty universally followed. Probably it ought to be accompanied with some precautions about shearing-time, to prevent the sheep from catching cold. It is obvious this could never be practised with profit on short-woolled sheep, unless for making hats.

COR. 2. Those who inhabit a climate that is too hot for producing fine wool in summer, might by this practice obtain fine carding-wool if they were possessed of a breed of fine long-woolled sheep: for by thus separating the coarse from the fine, they would obtain an equality of filament, which it would be impossible for them ever to attain by any wool that grew for the whole season. Hence,

COR. 3. If ever those who inhabit a country enjoying such a climate, hope to obtain good and fine carding-wool of their own growth, it must be by importing a breed of long, and not of short woolled sheep, and treating them in this way.

COR. 4. It appears from the above induction, that although a country having a warm climate,
may

may obtain by good management, fine carding-wool, it is impossible for them ever to have very fine combing-wool; as the ends of it which grow in summer must always be coarse.

QUERY. Since long combing-wool can thus be made to afford fine carding-wool, and since a sheep of the same bulk will afford a much more weighty fleece of the first kind than of the last,—Whether would it be more economical, even for those that inhabit a climate that admits of it, to rear sheep that produce only short wool, or to obtain it in the manner above described?

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OBSERVATIONS

ON

NATIONAL INDUSTRY.

LETTER SEVENTH.

C O N T E N T S.

Disquisitions relating to sheep and wool continued.—

Of other circumstances that tend to produce a variation in the quality of the wool of different districts.—

There are different varieties of sheep, whose qualities are not accidental, but are transmissible to their posterity.—

Buffon's opinion in this respect erroneous,—exemplified as to dogs,—and horses,—and sheep.—

Erroneous reasonings that have thus been adopted, pointed out, and refuted.—Consequences that result from this discussion.—Objections answered.

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OBSERVATIONS
ON
NATIONAL INDUSTRY.

LETTER SEVENTH

TO MR. *** LONDON.**

DEAR SIR,

October 10, 1775.

I HOPE you received mine of the 2d instant, containing many observations on the influence of the climate on the quality of the wool of sheep. Without waiting for your remarks on that letter, I now proceed to take notice of some other particulars relating to sheep, that ought to be examined with candour before we can with certainty determine whether or not Scotland is capable of rearing abundance of wool.

It

IT may probably have occurred to you on reading my last letter, that if a variation in the heat of the climate produces such a sensible change on the quality of the wool as is there alleged, there must undoubtedly be some other circumstances, besides a variation in the climate, that have a powerful influence in that respect; seeing we find a very great difference in the fineness and other qualities of wool produced in different districts, where the difference of climate is but very inconsiderable.

FOR although we should be disposed to attribute ever so much to the influence of the climate of Great Britain over that of any place on the continent; yet the difference between the heat of the climate of several places in this island that afford wool of very different qualities is but very inconsiderable, if at all perceptible. Lincolnshire seems to enjoy no advantages in this respect over the neighbouring counties of York and Durham. The southern parts of Kent, Suffolk, and Hampshire, are rather warmer than Buckinghamshire. Many parts of England enjoy a climate nearly similar to that of Hereford and Gloucester; yet wool of an equal quality is not to be met with in any other part of England. The mountains in Shropshire

shire enjoy a temperature nearly the same as those of Derby and Northumberland; but the wool that grows on the first is of double the value of that which is produced on the last. In short, there seems to be so little connection between the fineness of the wool that grows in different parts of Britain, and the temperature of the climate of these places, that had we not other proofs which demonstrate in the most satisfactory manner the influence that heat or cold has over the quality of the wool, we should from this circumstance considered singly, be disposed to believe that a difference in point of climate had no effect at all.

THERE seems to be but one way of reconciling these two contrary facts with one another, viz. by supposing that there may be a great many varieties of this species of animals; each of which varieties is endowed with certain peculiar qualities that are transmitted to its progeny, so long as the particular breed is kept pure from any admixture with others.

As you are a professed naturalist, and a great admirer of Mr. Buffon's system, you will possibly be disposed at the first to reject this hypothesis with indignation, as unsystematical,
being

being directly contradictory to the opinion of that celebrated naturalist; yet I am not in the least afraid that you will differ in opinion from me as to this particular, after you have considered it with an equal degree of attention as I have done. Buffon, you know, my good Sir, with all his talents, is but a man; and a man as liable to be hurried away into the regions of fancy by the vivacity of his own ideas, and the bewitching seductions of a spirit for *system* as almost any other man whatever.

It seems probable, that every species of animals which inhabit this globe, admits of many permanent *varieties**, each of which possesses certain qualities in a more eminent degree than other varieties of the same species, which may be transmitted to their descendents to the end of time, if they be kept from intermixing with other varieties of the same species. But as nature hath placed no barrier to prevent the inter-

* As naturalists have not yet taken much notice of the peculiar distinction of animals mentioned in the text, I am at some loss for a proper term by which to express it. In botany the term *varieties* is employed to denote something of this kind—with regard to vegetables; in the language of the farmer these variations are sometimes called *breeds*. I here use this term, or *varieties*, as synonymous, for want of a more proper word than either of them.

copulation of these varieties with one another, wherever these have free access to each other, the original distinguishing qualities of the parents will be soon confounded in the descendents by this promiscuous copulation.

BUT from the natural indolence of mind to which mankind are so universally subjected, we have hardly hitherto distinguished with any degree of accuracy, the varieties that take place in this respect among any class of animals, unless it be dogs, horses, and cocks.

THE dog, from his peculiar attachment to man, has become such a favourite domestic as to experience a more particular share of his attention than any other animal whatever. He partakes with man in his ordinary food in every part of the globe; and as he lives more immediately under his master's eye at all times than any other creature, it was impossible for him not to remark the different distinguishing properties for which the several varieties were peculiarly remarkable. And as the qualities which distinguished the several breeds of dogs did on many occasions become subservient to the pleasure or convenience of man, he was naturally induced to try if these could be transmitted to

their posterity in full perfection, by keeping the breed distinct from others. And in consequence of many experiments that have been thus made, he has been enabled to perceive with certainty, that the several varieties of this class of animals are possessed of peculiar natural talents which are permanent; insomuch that any particular breed may be kept quite distinct from any other breed for ever, if care be taken always to prevent them from intermixing with one another at the time of copulation.

AND although it be true, that certain climates produce peculiar changes on the temperament of this class of animals; yet, as these changes equally affect the whole species, it has not the smallest tendency to transmute one variety into another, as Buffon supposes. On some parts of the coasts of Africa dogs of any kind in a short time lose the power of barking; but every kind of dog experiences this metamorphosis.—In warm climates the hair of all dogs is thinner than it would be in colder regions; but every variety of the species experiences a similar change in this particular. The Spanish pointer bred in Great Britain with proper care, possesses the same kind of instinct with its parent breed, and never could acquire any of the qualities of the

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the beagle, but by intermixing with some of that species.—The small Italian and large shaggy greyhound may be kept distinct from one another for ages about the same family. Nor is there any instance of a spaniel, a shepherd's dog, or a greyhound, producing a bulldog, mastiff, or any other species but their own, unless where they had access to dogs of that kind; in which case a mongrel breed would infallibly be produced*.

* I cannot help here pointing out another error of Mr. Buffon, nearly connected with the subject here treated of. He maintains that sheep and goats are of the same species, and readily intercopulate with one another; and that this progeny is not of the infertile *hybridic* sort, but only a mongrel breed that are capable of producing others; and that after a few generations, this kind of animal becomes a sheep in every sense of the word, and carries as fine wool as the parent-sheep. Where he met with the facts that tend to establish this opinion, I know not; but it is well known, that although sheep and goats are kept promiscuously at all seasons of the year in the Highlands of Scotland, there are no instances to be found of their intercopulating; nor is there ever there found any mongrel animal of this kind. The horse and the ass are by him allowed to be distinct species; yet there are instances of mules being produced without the interposition of man. From whence it would seem, that there is a much greater natural reluctance between the sheep and goat than between the mare and the ass; as it is universally allowed, that the he-goat is the most salacious animal that is known.

It would surely be necessary to ask your pardon for dwelling so long on a particular so obvious to every one who will think upon it for one moment seriously, did not the deference that is justly due to a philosopher of so much eminence plead my excuse. I forbear to enter into any formal refutation of his assertions on this head, as you cannot but perceive their fatality at the first glance, after being thus put upon your guard *.

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* To such as are not acquainted with Mr. Buffon's system, it may be necessary to be somewhat more particular. I shall endeavour to give an idea of his hypothesis on this subject as briefly as possible.

The shepherd's dog Mr. Buffon considers as the parent-stock from which all the different varieties have been produced, by a change of climate, education, food, and other circumstances. "This animal (he observes) still continues pretty nearly in its original state among the poor and temperate climates. Being transported into colder regions, he becomes smaller, as among the Laplanders; but becomes more perfect in Iceland, Russia, and Siberia, where the climate is less rigorous, and the people more civilized."—But if there is a difference in the dogs of these countries, it can scarcely be owing to the cause assigned, as the climate of Lapland is as mild as that of Siberia, and the inhabitants perhaps more civilized.

"The shepherd's dog, (he farther observes), if transported to temperate climates, and among people entirely civilized, such as England, France, or Germany, becomes divested of his savage air, his pricked ears, his
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SOMETHING of the same kind has been observed with regard to horses; but, from the greater difficulty in making the necessary experiments on them, and the less obvious distinctions with

"long thick hair, and from the influence of climate and education will become a bull-dog, a mastiff, a beagle, or a hound."——But if this were the case, whence should it happen that we in Britain have the race of shepherd dogs in as great perfection as any where else, and the mastiff, bull-dog, hound, &c. in equal perfection; and can preserve the breeds of each of these kinds as distinct from one another, as if they had been bred in the most distant corners of the earth?

"The hound, the tarrier, and small-spotted setting-dog, he considers as of the same family; and asserts, that they are often all produced at the same litter, although the bitch should have been covered with only one kind of dog."——I ask at the reader, if ever he knew a single instance where this happened?

"The hound, (he farther observes), if transported into Spain or Barbary, where the hair of all animals becomes soft and long, will be converted into the land and water spaniel;—and when these are again brought back to Britain, instead of returning to their former state of a hound, they become the small shagged dog."——But who does not know, that spaniels continue to be bred in Britain for ages without degenerating in the smallest degree?

We have seen above, that the mastiff, bull-dog, beagle, and hound, to which, may be added the tarrier and small setting-dog, are all produced in Britain from the shepherd's dog transported from cold climates.——"But this mastiff dog, (he observes), when carried to the north, deserts his original family, and becomes the large

with regard to the qualities of each different breed of these, our ideas, as to this particular relating

“large Danish dog;—and when transported to the south, becomes a greyhound. The same transported into Ireland, the Ukrain, Tartary, Epirus, and Albania, becomes the great wolf dog, known by the name of the *Irish dog*, which is the largest of all dogs.” Thus he makes the shepherd’s dog, when transported from the north of Britain, become a mastiff; and that again, when remanded back to the north, instead of returning to its original state of a shepherd’s dog, becomes a large Danish dog;—which again brought back to Britain, its original country, instead of a mastiff, becomes a greyhound; which, by another change of climate, scarce perceptible, is metamorphosed into the large Irish dog.—These surprising transformations might figure very well in Ovid, but do not tally quite so well with the character of a philosophic natural historian.

“The bull-dog, (he farther goes on), when transported into Denmark, becomes the little Danish dog; and this little Danish dog, sent into warm climates, becomes the Turkish dog without hair.”—In the last paragraph, we saw the mastiff in a northern climate encrease in size, and become the large Danish dog: here his brother the bull-dog, by a like change of place, dwindles into the small Danish dog.—How it should happen, that the same change of climate should produce changes so diametrically opposite, remains to be explained.—When this little Danish dog, however, is sent back to milder climates again, he does not recover his former size, or grow larger, like the mastiff; but by another metamorphosis, altogether as extraordinary becomes the naked Turkish dog.—The hound, the full brother of this mastiff, we saw on a former occasion, when carried to the warm coast of Barbary, got a coat of longer hair, and became a spaniel.

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relating to them, are far less certain and definite than with respect to dogs. Yet the connoisseur can point out with clearness and accuracy many unequivocal marks of distinction between the horses of Barbary, Spain, Arabia, Persia, Turkey, Hungary, Poland, Denmark, Sweden, &c. And any man who has travelled ever so little from home in his own native country, can hardly have failed to observe, that the horses in almost every particular district, differ from those of other districts in some very distinguishable respects; although he is but too apt heedlessly to ascribe almost the whole of this to the different nature of the soil, pasture, &c. in different places, rather than to any influence produced from a variation in the original stamina of the parent-animal. And although every one must have had innumerable instances of observing, that horses which have been brought from

I might proceed at this rate, for pages, and expose the absurdity of almost every position he assumes; for it is perhaps scarce possible to meet with such a bundle of contradictions, founded upon crude and indigested general analogies, crowded into such a small compass.—But it is painful for an ingenuous mind thus to be obliged to expose the accidental weaknesses of a man of real original genius, led astray by an unreasonable fondness for *systematising*. Such reveries from almost any other man could have required no sort of answer:—as coming from him, they require to be pointed out, and treated with some degree of seriousness.

one part of the country to another, continue to thrive there equally well as at home, and to possess all the qualities for which that breed were remarkable, in as high perfection as if they had still remained there; yet the favourite idea he had been made to adopt in his infancy too often prevails, and makes his experience avail nothing in correcting this vulgar error.

BUT if these illiberal ideas prevail very universally as to this favoured and more domestic animal, in spite of the daily experience of those who breed running horses to the contrary, much more may we expect that they should take place with respect to sheep, an animal, which, on account of its inability to travel, has little chance of being carried far from home, and on account of its mode of life, so nearly approaching to that of wild animals, hardly admits of being so narrowly observed in the rutting-season, as to prevent any individual of that species from intermixing with any others that may chance to be in the country around it, and of thus having its original distinguishing qualities much altered in its progeny, if it should be carried to a part of the country where a different variety prevails!

I HAVE

I HAVE heard it sometimes asserted, that a man had better not reason at all, than content himself with a superficial and imperfect induction of facts upon which his reasoning is founded. Perhaps the assertion is rather bold; but it is certain, that many errors are thus introduced into arts and sciences, and continue long to infest them with their baneful influences, which never would have been tolerated, had it not been for the specious appearance of reason with which they were at first established. An example of this sort occurs in the present case, which it is of importance to explain.

As many of the varieties of this species of animal are so distinctly marked, and obviously different from many others, there are few who can deny, that there is a very great difference between the qualities of the sheep that are bred in different districts. But as it has been remarked, that if a small number of sheep are introduced into a district where there is a breed differing from these in any respect, the descendents of these strange sheep, after a few generations, cannot be distinguished from the original breed of sheep in the country, it has been concluded, with some appearance of reason, that the soil or climate of that particular district was best calculated

culated to rear the sheep that were originally found in it; and that if any other sort should be introduced into it, the influence of these circumstances would be so powerful as to bring them in a short time to be of the same kind with their native sheep.

THIS opinion being once firmly established, the necessary consequence must be, that the inhabitants of each district will become entirely satisfied, that their own breed of sheep is better fitted for their soil and situation than any other breed whatever; and that if these are of a kind peculiarly excellent, there is no danger of hurting them essentially by the intermixing among them others of an inferior sort; and if they are of a bad kind, there is as little hope of improving them by introducing some of a better breed among them. For although it should be allowed, that there is *some* change produced upon their flocks when any different sort is *first* introduced among them; yet as this is imagined not to be of a permanent nature, it is apprehended that neither benefit nor hurt can accrue to either district, but by continuing perpetually to introduce great numbers of sheep of a sort different from their own; which could not be done but at such an expence as gives no room to
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hope for any considerable profit, or be apprehensive of any important loss from this cause. Thus both parties sit down contented with their situation, neither of them improving to the utmost the real advantages that they may be possessed of.

BUT as this reasoning rests entirely upon an assumed fact, which more accurate observations prove to be directly the reverse of what has been supposed, nothing can be more erroneous than the conclusion that has been drawn from it. For although it seems hardly to admit of any doubt, that every distinct breed of sheep, as well as every variety of the *canine* species, may be kept for any length of time without degenerating into another kind, in any part of Britain, if its blood be kept from being contaminated by the admixture with any other breed; yet so invariably does every particular species propagate its kind, and communicate its own peculiar qualities to its descendants, that if any one species be mixed with any other, the progeny will invariably be a mongrel breed, participating alike of the qualities both of the father and mother.

HENCE it happens, that when a small number of strange sheep come into any district where
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there are others differing in any respect from themselves, as it is impossible, by any ordinary care, to keep them from intermixing with the native sheep at the rutting-season, their progeny necessarily approach one step towards the nature of the sheep with which they are intermixed. And as these their descendents run the same risk of being farther debased than their parents were, it must of consequence follow, that, after a few generations, they will have so far lost their original marks, as scarce to be distinguishable from the sheep with which they are now associated. And although these strange sheep must communicate some part of their properties to their descendents, which will alter in some degree the qualities of the original breed of the country; yet this in time becomes so much divided, and bears such a small proportion to the whole, as to produce hardly any sensible effect, unless the experiment should be very often repeated.

To this cause, rather than the change of climate and pasture, must we attribute the little success that has attended numberless trials which are said to have been made to improve the breed of sheep in some particular districts: and to this cause likewise must we ascribe that permanency

nency of the qualities observable in the breed of sheep in many districts of the country.

Thus in Norfolk they have possessed, from the earliest period of which we have any records, a breed of sheep, remarkable, among other particulars, for having black faces; which continue unadulterated to this day; while in the neighbouring county of Lincoln they always had and still have, another sort, distinguishable by many other particulars besides the shining whiteness of their faces. And although it must have happened, that a few white-faced sheep have been at different times brought into Norfolk; yet by their speedy admixture with the others, the race has been quickly debased, so as that it has been impossible to distinguish them from the original breed of the country.—In the same manner, if a black-faced sheep should accidentally have come into Lincolnshire, its descendants would quickly lose this distinguishable peculiarity, and become in a few generations in no respect different from the other sheep of the country; so that the particular breed of each county continues still distinct from the other, notwithstanding these casual mixtures of different sorts from time to time.

THAT

THAT the difference in this respect must be ascribed to the cause here assigned, and not the former, seems to be evident; seeing there is so little difference between the climate of these two counties as to be hardly perceptible. And the pastures of each are so nearly alike, that no one who thinks seriously on the subject can be in good earnest persuaded, that this great difference in the nature of the sheep of each district, and the change that happens upon their being carried from the one to the other, can be produced by these causes.

BUT what proves beyond a possibility of doubt, that these changes are occasioned merely by a mixture of blood, and not from any change of climate or pasture, is, that the original sheep brought into either of these places, continue to retain all their distinguishable qualities during their whole life, in as great perfection as if they had always continued in their own native district: the changes specified above being only observed to take place with regard to the sheep that are their descendents. There never was an instance known of a sheep that had once been black-faced becoming white-faced, nor *vice versa*.

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IF these observations, together with the fact related in my fourth letter, p. 106, 7. were not sufficient to afford entire satisfaction as to this particular, I would refer you to the experience of almost every individual who has ever been possessed of sheep for a confirmation of it. And if you yourself attend to it, you can hardly fail to meet with incontestable proofs of it in the few expeditions that you take to the country. For wherever you meet with a flock of sheep in which you perceive different kinds, you will always find that the lamb participates a good deal of the nature of the mother, so that there will be as many different kinds of lambs in the flock as there has been of ewes, although there has been but one ram for the whole. This I myself know experimentally: for as I have had in my own flock for some time past sheep of three different kinds, easily distinguishable from one another by the different lengths of their wool, and manner of its growing, as well as by the particular make and carriage of each sort, although not by the colour of their faces, I could venture to pick out all the lambs of each particular breed without seeing any of their mothers; and could in some cases distinguish a mixture of the blood of one sort with another, even to the third or fourth generation. Nor is it difficult for one

one who bestows attention upon these matters, to distinguish with a considerable degree of accuracy the lambs of each particular ram in his flock, if these are not exactly of the same kind. Neither of which could be done, were it not that the descendents invariably partake of the shape and quality of wool of their parents.

It will readily, however, occur to you, that those who have not been accustomed to view this animal with a critical familiarity, will find it impossible to repeat this experiment with the same facility, as another who has been long accustomed to examine this species of animals with attention. For the experienced sheep-breeder will perceive, at the first glance of his eye, a sensible difference between two sheep which appear to be in every respect the same to another person ignorant of these matters, in the same manner as a sailor perceives a sensible difference between every ship he meets with and any other, when a land-man thinks they are all alike. This I only hint to you, lest you might be disappointed in trying this experiment.

I HAVE been at great pains to ascertain this fact; as it is a fundamental one in leading to a proper plan for improving the breed of sheep in
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any particular district, while at the same time it explains in the most satisfactory manner*, the causes of those otherwise unaccountable variations we meet with in this respect. For wherever chance has established a breed of sheep that have been remarkable for any valuable quality, they have there encreased; and their descendants have continued to possess the same qualities in a lesser or greater degree, according to the attention of the owner, or the favourable nature of the place. And, in like manner, those

* As some time has intervened since writing the above, I have had occasion to make many observations, all of which tend to prove, that every variety of any kind of animals retains its own peculiar qualities without alteration, if care be taken to keep them from copulating with other varieties of the same species. Some of the proofs of this matter that have occurred have been curious enough; one of them is so singularly striking that I cannot help taking notice of it here. Those who keep game-cocks are well aware of the necessity of preserving the genuine breed unadulterated by any spurious mixture, but other varieties of this tribe of animals have been much disregarded, except by some curious persons who take delight in rearing and feeding them. A lady of my acquaintance of this cast, having accidentally met with a breed of fowls that had no tail, got a cock of that kind, which soon produced a motley breed with her former hens, part wanting and part having tails, though thinner than usual. One in particular had the feathers on one side of the tail complete, but not the least mark of a feather in the other side of it.

places that have got a bad breed of sheep at first, continue still to feel the inconveniencies arising from thence, unless the inhabitants have been at pains to correct it by a more than ordinary degree of care.

Thus Lincolnshire, Cotswold, and Leominster, have each of them been blessed originally with a good breed of sheep, although differing from one another in many particulars; and their progeny continue to have the same qualities in kind, for which they were at first remarkable: while many other parts of England and Scotland that are equally well fitted for producing fine wool, having never been possessed of such a valuable kind of sheep, have never yet been able to equal the places mentioned immediately before, in this respect. But as we are now acquainted with the causes of our failure, and may be sensible of the way to obviate them, let us not despair of being able to succeed in our attempts at improving our breed of sheep, if we act with judgment and discretion.

To point out some other circumstances necessary to be attended to in making this attempt, will furnish matter for another letter. But before I conclude this, I shall obviate one objection

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tion that may perhaps occur to you in reflecting on what has been already said relating to sheep.

It may perhaps appear a little difficult, to reconcile what has been said in this letter about the permanency of the qualities of different breeds of sheep, with what had been formerly demonstrated as to the great influence that the climate has over the fineness of the wool.

BUT if it be considered, that the heat or cold of the climate produces invariably an alteration on the fineness of the wool of sheep exactly proportioned to its degree, whether the wool produced upon the sheep has been originally fine or coarse, we shall easily perceive, that it can have no tendency to affect the permanency of the qualities that the different breeds of sheep are possessed of.

FOR let us suppose, that in two districts which enjoy a like temperature of climate, there should be found two breeds of sheep, one of which afforded wool of a very coarse quality, while the other afforded very fine wool:—If these two different breeds of sheep were carried both to any other climate either warmer or

colder than the former, the wool of both kinds of sheep would become coarser or finer, in proportion to the change of climate: but they would become equally so changed; so that there would still remain the same difference between the two breeds as if they had never been transported from their native country: and if they were brought back again, each of them would afford wool of the same quality as if they had continued always in the same place. Thus it appears, that although the wool may be sensibly affected by the degree of heat or cold that the animal may suffer for the time, yet the stamina of the creature may be said to remain the same, and the peculiar qualities of each breed to be unalterable by this means.

BUT if two breeds of sheep should be found which afforded wool of the same degree of fineness, although one of them inhabited a warm climate and the other a cold one, we should form a very erroneous judgment, if we imagined that they had been originally of the same kind, and therefore are of equal value. For should these two kinds be both transported into a country enjoying a temperature

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rature of climate between the two extremes they formerly inhabited, the wool of the one would become finer than before, while that of the other would be coarser. Or should they mutually change places with one another, their wool, instead of continuing of an equal degree of fineness, as at first, would soon become exceedingly unlike; that of the sheep which originally inhabited the warmer climate becoming extremely fine, while that of the other would grow coarser in an equal degree. These two breeds, therefore, instead of being essentially the same, as they appeared at first sight, are exceedingly different from one another, although in dissimilar circumstances they appeared the same.

FROM these observations we may be enabled to draw one useful corollary, viz. That in our attempts to improve the fineness of our wool, it will be always necessary to chuse the fine-wooled sheep from a warmer climate than our own. For if, in their native country, they produced wool of an equal or finer quality than our own, it will be so far bettered by the change of place, as to be an essential improvement. But if we were to bring sheep from a colder climate, it would
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so far degenerate, as to be no improvement at all, unless it happened to be exceedingly finer than our own.

THIS seems to give some probability to the story told by Columella, who says, that his uncle Marcus Columella introduced some rams from Barbary, which helped greatly to improve the quality of the wool of Spain. The same experiment is said to have been repeated with more success by Don Pedro IV. King of Castile; in which he was followed by the great Cardinal Ximenes*, who thus is said to have secured to his country the pre-eminence in that respect for which they have been since that time so justly famous. For although the wool of Spain was much valued by the Romans, yet we learn from Pliny, that this was chiefly on account of a brown colour that was natural to it; the Romans not being well acquainted with the art of dying wool. And although the African wool is at present inferior to that of Spain, yet as the mountains of Leon are much colder than those of Africa, it is

* I quote the whole of this story from M. Carlier, who does not seem on many occasions a very accurate historian. See *Traité des bêtes à laine*, p. 13.

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possible they may be originally descended from the same stock.

BUT not to detain you longer on these circumstances, which are at best but conjectural, I shall descend to the regions of sober *certainty*, by assuring you that I ever am, with the most sincere regard, your very affectionate humble servant.

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OBSERVATIONS

ON

NATIONAL INDUSTRY.

LETTER EIGHTH.

C O N T E N T S.

Disquisitions relating to sheep and wool continued.—
Sheep that carry fine wool not necessarily less hardy
than others.—Sheep bearing fine wool do not ne-
cessarily afford less weighty fleeces than those that car-
ry coarse wool.—Long wool not necessarily coarser
than short wool.—Large-sized sheep not necessarily
less hardy than those that are of a smaller size.—Eve-
ry valuable quality or hurtful peculiarity of sheep may
be united with any other quality in the same animal.—
Consequences that result from thence.—An encomi-
um on Mr. Bakewell.—Cautions with regard to
his breed of sheep.—Sheep of a moderate size more
proper for Scotland in general than a large breed—and
why.—Circumstances in which the large breed ought
to be preferred.—The woollen manufacture having
been neglected in Scotland, little care has been taken to
prevent the quality of our wool from growing worse.
—Disquisitions relating to the practice of smearing
or laying sheep:—Proved to be a useless,—expensive,
—and hurtful practice.

OBSERVATIONS

ON

NATIONAL INDUSTRY.

LETTER EIGHTH.

TO MR. ***** LONDON.

DEAR SIR,

October 16, 1775.

BY comparing together the several observations that have been already made in this series of letters, I make no doubt but you will be very well satisfied, that if Scotland has not hitherto produced such fine wool as some other parts of Europe, it has neither been owing to the coldness of its climate nor the badness of its pastures. But as I purpose to make a more particular

particular survey of this part of our island in these respects, after having fully enquired into the nature and peculiarities of the different kinds of sheep, and examined the various popular opinions that prevail with respect to them, I now proceed to the discussion of such of these as have not hitherto been taken notice of.

MANY who are fully satisfied that there are different breeds of sheep, whose distinguishing properties might be transmitted to their progeny, for any length of time, if kept from intermixing with others, would still be extremely averse to any proposal that might be made for improving the quality of the wool of any particular district, by introducing into it a breed of finer-wooled sheep than they had formerly possessed: because, say they, these fine-wooled sheep being of a more tender and delicate constitution than such as carry wool of a coarser quality, the farmer would lose more by the additional care that these would require, than he would gain by the additional price he might get for his wool.

BUT, with all due deference to the judgment of those who may maintain this opinion, it may be allowed me to ask, if they have ever met

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met with any satisfactory proof that they are not mistaken with regard to the supposed fact from which they draw their conclusion. For my own part, I think there is great reason to believe, that it rests upon no better foundation, than that general bias we always feel in our mind, to associate the idea of fineness of quality, in any organized substance, with that of weakness and delicacy in the subject that produces it. But when we look around us for facts to corroborate this idea, we meet with none that tend to support it.

WE have no reason to believe, that the sheep in those parts of England that produce the finest wool, are in any respect less hardy than those that yield wool of the coarsest quality. They live in a climate equally severe as the others,—are not in any respect more carefully tended, nor are more subjected to diseases of any sort than these are.

AND with regard to the flock mentioned p. 105, 6. which consisted alike of these two kinds of sheep, and were in every respect managed in the same way during the whole time that they continued together; it was observed, that the fine-wooled sort increased more, and
were

were at all times in as good plight, and subject to as few diseases or accidents of any sort, as the coarse-wooled sheep that were kept along with them.

THE same thing I have also remarked with regard to my own flock; in which there are some sheep that carry wool of the very coarsest quality, which are in general of a much more weakly constitution, and liable to more distasters, than others that carry wool of four times its value*.

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* Mr. Carlier, speaking of the sheep of Bretagne, observes, that near *Landerau*, "Le bétail blanc y est à si bas prix, qu'on vend les moutons non à la paire, mais à la douzaine. La chair en est dure, & la laine mauvaise. Cette raison fait qu'on néglige d'en élever autant que les pâturages pourroient en nourrir.—Nous sommes certains que les pâturages des lieux dont il s'agit ne sont pas de pire condition, que ceux de cent autres endroits, où les matayers & les menagers se trouvent bien de cultiver cette partie de l'économie rurale. Les propriétaires se plaignent beaucoup des maladies, comme d'un sujet de découragement." p. 685. Here is a bad, and tender, and worthless breed of sheep in every respect, carrying coarse wool.

Mr. Hassler, a Swedish author, who has written a judicious treatise on sheep, which has been translated into French, confirms the same opinion by the following observations.

"L'expérience (says he, preface p. 38.) m'a appris, que les brebis étrangères, pourvu qu'on les soigne bien prof-
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I do not however mean from this to infer, that sheep which carry fine wool are *always*, and *necessarily*, of a more hardy sort than those that yield coarser fleeces; but think, I may, without hesitation venture to place the contrary opinion under the class of *vulgar errors*, which have been heedlessly adopted without sufficient foundation.

To the same class likewise must we refer that opinion which supposes, that a fleece of fine wool always weighs less than one of coarse wool, from a sheep of the same size: for, from repeated experience I can safely aver, that this is not the case. My own experience, would rather make me incline to the contrary opinion; as the finest-wooled sheep in my flock yield the weightiest fleeces from sheep of the same size. But neither would I venture to affirm that this is always the case; as I rather believe it is in

"*pèrent beaucoup mieux chez nous que les nôtres, qui ont
" pourtant le poil plus grossier.*"

And again, "L'agneau d'un belier de Flandre & d'un
" mère Françoise, ne devient guères plus grand que le
" commune espèce en France; *ils portent cependant le double
" de laine & beaucoup plus fine, quoiqu'ils n'aient que le
" même pâturage qu'ont les autres.* Manière d'élever les
bêtes à laine par Haller, p. 41.

And again, p. 56. "Moins l'espèce est bonne, moins
" elles pourroient supporter le froid; au contraire, *plus
" l'espèce est fine, plus elles y résisteront long-tems.*"

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some cases the one way, and in others the reverse. A French author who has bestowed much attention upon this subject, remarks,—that the wool of the breed of fine-wooled sheep in the *Barrois de Champagne* is closer, and the fleece more weighty, than that of the coarse-wooled sheep of the same district; which is the reverse in *Normandy*, where a fleece of the fine-wooled sheep of that district weighs a third less than one of the coarse-wooled sheep of that county. *Traité des bêtes à laine, par M. Carlier, 4to, p. 784.*

It is also a common opinion, that the longer the wool is, the coarser is its quality. And you will frequently meet with persons who judge dogmatically of the coarseness of the staple of the wool from the length of it. But this opinion is equally ill founded as the former. I myself have had wool very near half a yard in length, the filaments of which were so fine, that many persons, who were not very great judges indeed of this matter, thought equally fine as some Spanish wool with which it was compared; while other sheep of the same flock gave me wool that hardly exceeded an inch in length, which was at the same time as coarse as dog's hair. The wool of the Cornish sheep

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is not of half the length of staple as the finest Lincolnshire wool; but it is of such a bad quality as to obtain universally the name of *Cornish buir* *.

NEITHER, however, would I from this infer, that long wool is always of a finer staple than short; for I have likewise had long wool of a very coarse quality, and short wool very fine. It is enough if we rest satisfied that the fineness of the staple of the wool is in no wise connected with the length of it; although it is not disputed, that those parts of the fleece are usually coarsest which are of the greatest length; the buttocks being for the most part longer and coarser than the sides; the observing of which might probably have given rise to that opinion. But those who are sufficiently careful of their breed of sheep, may soon render the difference in this

* La laine Eiderstadienne (says Mr. Haistler), est à la vérité plus fine que l'Allemande; mais elle l'est moins que l'Angloise; & pour la longueur elle n'approche ni de l'Allemande, ni de l'Angloise, ni de l'Espagnole, p. 52.

Here the particular wool, that he calls *laine Eiderstadienne*, is finer, and at the same time shorter, than the German wool.—It is coarser than the English wool though shorter.

—It is even shorter than the Spanish wool, though it must be coarser by many degrees than it, seeing it is even inferior to the English.

respect far less considerable than it usually is found to be at present *.

It is likewise a prevailing opinion, that large-sized sheep are less hardy than those that are of a smaller sort: An opinion which, if taken in the same general and unlimited sense as the former, probably is as little just as these are. It will not be disputed, that a large-sized sheep requires a greater *quantity* of food than one of a smaller sort. But that it either requires it of a richer quality, or in greater quantity in proportion to its own bulk, appears to me extremely doubtful. For although I have had both sorts in my own flock for some years past; and though these have been always fed upon the same pastures, and treated in every respect alike; yet the larger sheep have been at all times in better order, and more forward in feeding, than the other sort; in so much that my shepherd, who was at first greatly prejudiced against the larger sheep, is now so fully convinced of their

* By chusing such sheep to breed from, as have little variation between the fineness of the wool on the buttocks and other parts of the fleece, I have seen some sheep, in which the difference of value of different parts of the fleece was upwards of ten to one, and others in which it would hardly amount to the proportion of two to one.

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superior hardiness, that he has frequently urged me to keep none of the others.

I MIGHT proceed to take notice of many other opinions that are generally adopted on this head, with as little reason as these already enumerated, which, to avoid prolixity I omit. To enable you to judge for yourself in these cases, it may perhaps be sufficient for me briefly to remark,—that as there seems to be an indefinite variety of breeds of sheep, so the peculiarities that distinguish these different breeds from one another may be infinitely diversified. Some differ from others in regard to size; others may vary with respect to hardiness or delicacy of constitution; others in the shortness or length of the wool, while others differ only with regard to the coarseness or fineness of it. And in the same manner they may vary from one another in respect to every other peculiarity by which one breed may in any case be distinguished from another.

AND as there is nothing to prevent any of these distinguishing qualities from being united with any one or more of the others in the same sheep, we need not be surprised if we meet with varieties of sheep differing from one another in all possible respects. Thus one kind may be

small and hardy; while another, although small, may be endowed with a tender and delicate constitution.—One sort may be of a large size, and weakly temperament; while another is large, hardy, and robust.—One kind, although large, may carry short wool of a fine quality; while another small breed carries long coarse wool; or the reverse.—One sort may be large, hardy, easily fatted, and carry an exceeding weighty fleece of the finest silky wool; another may be large-boned and stately, and carry a very light fleece of fine wool; or a third sort, possessing all the other qualities of these, may yield a poor fleece of wool of the very coarsest quality.

IN this manner may any one quality that renders sheep valuable, or the reverse, be accidentally combined with any other qualities *in infinitum*: which I am satisfied does actually take place in nature, and produces a much greater variety of breeds of sheep, more or less fitted for any particular purpose that may be required than is commonly imagined.

A NECESSARY inference that we must draw from these premises will be,——That in some particular places it may so happen, that a particular breed of fine-wooled sheep may be met with,

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with, which may be really of a more tender constitution,—more difficult to rear, and less profitable to the owner, than another sort in his neighbourhood that carries wool of a coarser quality. On the other hand, it is possible, that in another district there may be a breed of sheep that carry very coarse wool, which are at the same time of a weakly and delicate constitution; while in another corner there is found a breed which carry as fine wool as the first, and enjoy a constitution and temperament of body as hardy as could be wished for.

AND as the same diversity may take place with regard to the qualities that may be combined with the length or shortness of the wool, or any other distinguishable peculiarity, we ought to be taught to be extremely cautious about drawing general conclusions from any particular cases that may have come under our own cognizance, and by no means to conclude, that because, in the instances that have occurred to ourselves, any two of these qualities were united or disjoined, that therefore they are always so*; but rather, with a cautious circumspection, let

* These observations are confirmed by the following facts, furnished me by Mr. Carlier, in his *Traité des bêtes à laine*,

let every one extend his observations around him as far as is in his power; and if he perceives that his own breed does not already possess *all* the valuable qualities he would wish for, endeavour to discover others that possess in an eminent degree those qualities that are most wanted in his own.

BUT while he thus, with a laudable zeal, endeavours to improve his breed in one respect, let him be anxiously solicitous not to overlook any other particular that may alter the quality of his flock; lest, in gaining one thing, he should lose

à laine, who has made a more accurate survey of the different races of sheep in France, than ever has been made with regard to those of Britain.

In the *Champagne de Berry* they keep two kinds of sheep; one of which carries exceeding fine wool, reckoned equal to that of Segovia in Spain (p. 704.), from which the breed originally came;—and the other affords wool of a very coarse quality. The race of coarse-wooled sheep is there found to fatten more easily than the fine-wooled sheep (p. 705.) In Picardy there are also two breeds of sheep, the one yielding coarse, and the other fine wool; but here the last-named sort fatten more easily, have a sweeter flesh, as well as finer wool, than the former, (p. 797.)

Again, the fine-wooled sheep of Berry yield fleeces near one fourth weightier than the others (p. 714.), while the fine-wooled sheep in Normandy yield less weighty fleeces, than the others there that carry coarser wool (p. 784.)

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some others of yet greater value. Thus, let us suppose that his own sheep do not carry wool of a very fine quality, and that he would wish to improve it in that respect; in his choice of a breed to improve his own, or to supply its place altogether, he ought not to rest satisfied that he has obtained all he ought to have, if he gets a breed that carries wool of a much finer quality than his own; but before he finally makes a choice, he ought to attend to the quantity thereof, to the hardness, — shape, and all other valuable peculiarities of the sheep. And if he should find them deficient in any one of these, let him weigh the importance of it; and if he finds it too great to be sacrificed, there is no reason to despair of ever succeeding, but sufficient inducement for him to search around, till he perhaps meets with a breed possessing *all* the valuable qualities he wishes for.

THIS is a field for speculation, which although perhaps in some measure new to you, has not altogether escaped the penetrating attention of some English farmers: and although the principles upon which it depends, have not hitherto been fully developed, the sagacious Mr. Bakewell, of whom you have probably heard, has, in some branches of rural oeconomics, confirmed by
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a most successful practice the justice of the above remarks. By an attention peculiar to himself, he has been enabled to pick out for himself a breed of sheep, and cattle, and horses, more eminently distinguishable for those peculiar qualities in each kind that he most wished for, than is perhaps to be met with in the island; which ought to encourage others to go on with alacrity in prosecuting the same path that he has so happily entered, with the assured hope of making still greater, and perhaps more important discoveries.

LET us imitate Mr. Bakewell, but not servilely copy after him. Did he sit down contented with adopting without reserve the improvements of those who went before him; or with a blind admiration of the talents of any man of the most superior merit implicitly adopt all the ideas that they suggested to him? Far from it.—He opened his eyes;—he observed with attention;—he reasoned with accuracy;—he determined for himself according to the best lights that he could procure. We only then imitate him when we pursue the same route that he took for acquiring knowledge.—Let us thankfully avail ourselves of the lights that he has given us;—but let us not be so weakly blind as to suppose that

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that he, or any other man, has ever attained the summit of perfection in this or any other science.

My countrymen in Scotland seem to be at present so fully prepossessed with an idea of the inestimable value of his breed of sheep, that they seem to be in some danger rather of adopting them because of his name, than from any real excellencies that they with certainty know they are possessed of. Spurious breeds are introduced as his; and the art of sheep-rearing is become a species of gaming, in some instances little short of that of 'Change Alley'. When things

*As an instance of this kind, I beg the reader to peruse the following sale of sheep made at Ballinasloe in Ireland. The account of which I was favoured with by a friend.

October 5, 1773.

Leicestershire cattle sold at Ballinasloe, in Ireland, county of Galway.

		l.	s.	d.
66 Ewes,	- - -	1094	5	5
9 Rams,	- - -	352	12	6
5 Ram lambs,	- - -	29	0	1½
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80		80)1475	18	0½
Average each sheep,	-	l. 18	8	8½
One draught colt,	- - -	l. 170	12	6

	Guineas	l.	s.	d.
1 Ram to Col. Pearse,	- 52 -	54	12	0
2 Ewes, John Bodkin,	- - 46 -	48	6	0
—				
3	Carried forward	l. 102	18	0

things are carried too far, I am always apprehensive of danger.——If the one end of a balance is raised too high, there is danger that when it is left to itself it will descend too low,—and in national experiments this is always attended with danger.

Let it not be thought that I mean to depreciate in any respect the breed of sheep introduced by Mr. Bakewell. Far from it:—for I am convinced that it is perhaps upon the whole the most valuable that is found in the island.——But it ought to be remembered, that the views of this gentleman when he began to improve his breed, were very different from those that ought to actuate the improvers in Scotland. His principal aim was, to obtain a breed of sheep that would fatten kindly for the English market, and at an earlier age than ordinary, all other

3	Brought forward	Guineas	l. 102 18 0
2	ditto, Baron Rochfort,	- 43 -	45 3 0
2	ditto, Col. Pearse, - -	40 -	42 0 0
2	ditto, Mr. Blake, - -	40 -	42 0 0
2	Ram lambs, J. Moore, -	8 -	8 8 0
11			11) 240 9 0
	Average each sheep,		l. 21 17 2½

N. B. These were sold as Mr. Bakewell's, but none of them ever belonged to him.

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considerations being looked upon as only of a secondary nature when compared with this one. — But from the present state of Scotland it is evident, that the principal view of the improver there, ought to be to obtain abundance of fine wool,—and the other qualities to be considered as of an inferior importance to this most material one.

HENCE then it may happen, that Mr. Bakewell's breed may be the very best that can possibly be found for his own particular situation; and yet of only a secondary nature with regard to us. — And although I am disposed to think that no man ought ever to be entirely satisfied with the improvements of another, so far as to allow his own understanding and active faculties to be lulled asleep, and thus prevent all future attempts at improvement;—yet even if we should grant it in the present case, as to the end that he proposed, seeing *that* cannot answer the views of our northern improvers, it surely behoves us to look out for ourselves, in the hope that strenuous and unremitting efforts may at last be crowned with the desired success.

THE people of Scotland in general seem to be in danger of falling into another error with regard

regard to their attempts at improving their breed of sheep; as it is a very prevailing opinion, that those only can succeed in this respect who introduce into the country a breed of larger sheep than they formerly possessed; and they usually judge of the degree of improvement that has taken place in the improvement of the breed of sheep by the proportional encrease in their size.

BUT as there is no reason to doubt, that all those qualities that ought to be most prized in this species of animals, may be as often found united with a moderate size of body, as with an enormous bulk; it may very readily happen, that we may get a very large, and at the same time a very unprofitable breed. This circumstance, therefore, ought to be looked upon as a matter of very little importance, in determining our choice of a proper breed of sheep.

PERHAPS I might go a little farther; and were it not that it might have somewhat the appearance of a fondness for paradoxical opinions, I would even alledge, that, in the present situation of Scotland, it would perhaps in general be more prudent to make choice of a breed of sheep of a moderate size, rather than

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than one of a very large sort, supposing all other circumstances equal.

For as the wool must ever be considered as an article of greater proportional importance in Scotland than in England, whatever tends to produce the greatest load of it without any additional expence, ought to be considered as a certain gain in point of œconomy. But as the surface of the body bears a greater proportion to its solid contents in a small than in a large animal, the same weight of small sheep ought on this account to produce a greater weight of wool than if they were larger. This may appear to some a trifling consideration,—but upon an accurate investigation it will be found to be much greater than many at present are aware of*.

* The disproportion in this respect may be seen from the following comparative trial of the weight of the skin of a large and small beast.

Weight of the ox,	Weight of the skin,
784 lb. - -	84 lb. nearly one ninth.
2686 lb. - -	155 lb. nearly one seventeenth.

Hence the weight of the skin of a small ox is nearly as one to nine of the whole weight of its carcase, and that of a large ox not above one to seventeen. And as the wool of a sheep would be nearly in the same proportion, it would seem, that from this circumstance alone, nearly twice as much wool would be obtained from the same weight of small sheep as of large sheep. See Campbell's Polit. Surv. vol. 2. p. 176. and 179.

IN the second place, a sheep of a moderate size is not in such danger of sinking deep in softish ground, as one of very great weight; on which account it is not so apt to have its hoofs spoiled, and its feet hurt, so as to render it in some measure unable to travel; and therefore lives upon the whole more comfortably for itself, and ought in general to thrive better, unless in situations where they can live entirely at their own ease, and quite free from wet or soft ground of any sort.

THIRDLY, As many of the sheep-walks in Scotland consist of very extensive tracts of country, many parts of which are hilly and uneven, very weighty sheep would not be able to undergo the necessary fatigue of seeking their food on these extended pastures; whereas sheep of a moderate size could range through the whole without the smallest inconvenience or fatigue to themselves, and therefore with greater profit to their owner. And

LASTLY, In the present situation of Scotland, where it has not yet become the fashion to cut mutton into small pieces to be sold by weight, so as that nothing less than a quarter can be bought at once, there are so many more people

people who chuse to purchase small than large mutton, that, on this account alone, the small, if equally good, may always be sold to much better account, and come to a more ready market, at all times of the year, than that which is of a large size.

ON these accounts it would seem prudent in the oeconomic improver in Scotland, rather to avoid getting a large breed of sheep than to wish for it; and to endeavour, if possible, to discover a breed of a moderate size that should be possessed of the other valuable peculiarities that he might wish for.

It deserves, however to be here remarked, that the same qualities which render sheep improper for Scotland *in general*, may render them peculiarly proper in some situations.——A large sheep is less able to travel, and worse fitted for leaping fences, than a small one,—on which account this breed will be most prized in rich enclosed grounds, where it is hardly possible to confine the others.

THE woollen manufacture in Scotland has been for many years past of so little consequence, as to prevent men of talents from
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making any serious attempts toward the improvement of the quality of our wool. The care of our flocks has been entrusted to the lowest and most ignorant class of people among us, so that many errors in practice that have been introduced through ignorance or caprice, have been still adhered to with a blind perseverance, which may obtain the name of civil bigotry. The practice has been once introduced, and it becomes not a question now, whether it is at all necessary or not; but, taking that as already certain, the greatest ingenuity is exerted to discover reasons why it must be beneficial.

I HAVE just now chiefly in my eye the practice of *smearing* sheep, as it is called; a practice so universally prevalent over a very large district in the south of Scotland, that I believe there are thousands of inhabitants in that corner of the country, who are as firmly persuaded that their sheep could not live without it, as that they could not live without food. Yet however strange it may sound in their ears, it is a fact that admits not of a dispute, that in the northern parts of Scotland, where there are some as good sheep, and finer wool than any they have, the inhabitants have not a name for such an operation, nor the most distant idea of

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of the practice: and yet their sheep do not suffer in the smallest degree from the want of it. Nor do the sheep in England, where this practice is hardly at all known,—nor those of any other part of the globe, feel any inconvenience from the entire ignorance of the inhabitants as to this practice. How it came to be originally introduced into this particular district, would be matter of curiosity to enquire;—but it will be of greater *utility*, to examine with strict impartiality the reasons that are given by those who live in that district for their still adhering to this practice; that we may thus discover, if it is attended with any beneficial consequences to make up for the prejudicial effects that it is well known to have upon the wool.

BUT as you are probably as much unacquainted with the practice as with the name of *smearing*, or *laying*, as it is sometimes called, be pleased to be informed, that by that term is meant a particular kind of plaistering, or *be-smearing*, the whole body of the sheep, with an ointment composed of tar, and melted butter, or oil, mixed in certain proportions with one another. This is usually laid upon the sheep about the Martinmas season, about the 11th of November, in a particular manner which it is unnecessary here to describe.

ALTHOUGH this practice is so universal throughout all that part of Scotland to the south of the Forth, that there is perhaps hardly one man there who omits it; yet if they be asked what are the beneficial consequences that result from it, and what would be the consequence of neglecting it, it is ten to one if any more satisfactory answer is given, than that it is necessary for keeping their sheep alive through the winter. I have examined many of the most sensible among them on this head; and have never met with any thing that had the appearance of reason for it, excepting the allegations of some, that it was of use in preserving their sheep from the scab;—that it keeps them warm during the winter season;—that it keeps the wool from losing in the spring, and that it augments its quantity. If there are any other reasons alledged for this practice, they have not yet come to my knowledge; although I have used my best endeavours to discover them. But as it is of importance that this practice should either be firmly established, or totally laid aside, I shall examine with a considerable degree of attention how far it can be beneficial to the public in any of these respects.

It is now well known, that the scab in sheep is entirely a cutaneous disease, like the

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itch in the human species, occasioned by small animalcules concealed in the skin, which excite an uneasy sensation in the animal, that, if allowed to come to a great height, will infallibly destroy it at last. In both cases these animalcules may be killed by proper ointments judiciously applied, and the disorder be thus removed. Oil, if of a proper tenuity to enter the small pores where they lodge, and envelope them entirely, might suffocate and destroy them:—and although butter and tar may in some stages of the disease be perhaps of some use in this respect, yet its efficacy, as I, and many others, have repeatedly found, is so inconsiderable as to be of very little avail in removing that disorder; for if it be far advanced, it will have no sensible effect at all.

BUT even supposing that it could be an *effectual* remedy for this disease in all its stages, it could only produce its effects when it should be applied close to the skin, and thus allowed to enter the pores made by these animalcules and suffocating them; which could only happen if the sheep were troubled with this disease, *at the time that this ointment was applied.* But as the oil is quickly absorbed or dissipated, and the tar adheres to the wool, and rises from the skin as the wool advances in its growth, it can-

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not be supposed, after it has risen from the skin, that it can have any effect either in preventing or in curing the disease. For after that happens, the tar adheres so firmly to the wool as never to touch the skin again; and as this usually happens in the course of two or three weeks after it is applied, it could not possibly be of any utility either in preventing or curing the scab but at that very time when it was applied. This is what we might expect from reasoning: nor have they any argument to draw from experience to contradict this; as the sheep in the district where smearing is practised, are as liable to the scab, and suffer as much from this disease, as in any other part of the globe.

PROBABLY their attachment to this favourite ointment may on this occasion be hurtful to them, as it will prevent them from attending to other cheaper and more efficacious remedies for this disorder than it is; tobacco-juice being a cheap, safe, and infallible cure for this disease in almost all its stages. But as this can only operate as a remedy after the disease has taken place, and not as a preventive, it would be almost equally absurd to anoint them with it when the sheep are in perfect health as with the other mixture*.

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* Tobaccoists sometimes sell this juice, which they obtain in some particular part of their manufacture of that substance,

As to keeping the sheep warm in winter, it is evident, that if they stood in need of it, their favourite

substance, under the name of *tobacco oil*. This is a thick, black, fetid substance; and this likewise is the cheapest and best way of being supplied with it where it can be easily got. But where this cannot be had, a watery decoction of the leaves may be made at no great expence. —Five Scots pints (two gallons and a half) of water may be added to one pound of the leaves and stalks, and digested in a slow heat for twenty-four hours, and then strained off for use. It will be sufficiently strong for every purpose required if you have four pints of extract;—so that if it has evaporated more than enough during the operation, some water may be added to make up the quantity before it is filtered. This is a thin juice, which being poured upon the upper parts of the body, readily insinuates itself among the wool, and along the whole skin if necessary.

It is not only of use for curing the scab in all its stages, —but is also the most effectual mean of destroying lice, (commonly called *beds* or *beds*), which are often very troublesome to young sheep. When you see any one nibbling at any part of its body with its teeth, and pulling out small tufts of its wool, it ought to be caught immediately, and, after parting the wool on its back, pour a little of this juice all along it, which will soon run down the sides, and cover the whole body, so as to destroy these vermin effectually, without injuring the wool, or hurting the sheep.—A weaker decoction than this above named, will often effect this purpose.

Tobacco-oil is sometimes employed for curing the *mange* in dogs; but if it is too strong, it often proves fatal to them. Sheep are not so easily hurt by it.—I had once a dog killed with this juice, although it had been diluted with a large quantity of water,—though this very juice without

favourite ointment could not produce this effect; because it is risen from the skin before the severest cold of the season sets in. But the truth is, that sheep stand less in need of a defence from cold than almost any other animal. Covered with their warm fleece, they resist the severest cold without the smallest inconvenience; and they are probably never in better health, and of a certainty are never in higher spirits, than during a severe storm of frost in winter, provided they have their bellies filled with abundance of wholesome food. Could it defend them from wet it would be of real service to them indeed; as this always disheartens them, and occasions various diseases. It will hardly however, be alledged that it produces this effect; as it is not at any time sufficient to prevent the fleece from being drenched with water, the weight of which is then extremely burthen-

without any dilution, never hurt the sheep. I have not yet been able to ascertain with precision the strongest decoctions that could be borne by sheep, — nor the weakest that would be of any service.

It were to be wished, that, instead of burning the tobacco that is seized, it were condemned to be steeped, as the juice might thus be sold out at a very moderate price, and be beneficial to the country. — Such as incline it, may easily rear as much in their garden, at a very small expence, as would serve their purpose well. — The seeds may be had in every seed-merchant's shop,

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some, which is still augmented by the weight of the tar. It is doubtful if even at the first it be capable of keeping the moisture from the skin; but sure enough, after it is risen from the skin, and adheres entirely to the wool, it can have no beneficial influence either in this or in any other way. In this point of view, therefore, the practice must be condemned as useless.

As to its keeping the wool from losing in the spring; if it once loosens from the skin at the roots, nothing will keep it from falling off: and experience shows, that the sheep in the shearing districts are as often tattered in the spring as in any other parts of the country. The most effectual method of preventing that, is to keep the animal at all seasons of the year in high health and good condition.

With regard to encreasing the weight of the fleece; this it certainly does, not only by the weight of tar that is put upon it, but also by that of the dirt and rubbish that it fixes in the fleece by means of its glutinous quality. But what it thus gains in weight it much more than loses in value, not to mention the detriment that it is to the sheep, to carry such an additional

additional useless burthen upon them: so that in this respect also it is highly detrimental*.

I HAVE met with a few gentlemen who have been convinced of the inexpediency of *smearing* their sheep in general, who have nevertheless continued the practice with regard to their lambs, after they had given it up with their old sheep. But if it can be of no use to old sheep, it cannot benefit the younger. It must even in one respect be more prejudicial to them than it would be to the others. For as the wool of a lamb is longer than that of an old sheep of the same kind, and as it carries a much greater quantity in proportion to its bulk, while it is weaker, and less able to undergo great fatigue, than at a more advanced age: that wool, when drenched with water, becomes to it such an oppressive burthen, as often to occasion weakness, diseases, and death, when it would not have happened but for that cause. And

* I have seen a small pamphlet, entitled, *Observations on the method of growing wool in Scotland*, Edinburgh 1756, written by an ingenious and patriotic gentleman, who seems to be persuaded, that the practice of *smearing* with tar has been fondly adhered to by the farmers, from the gain they hope to make from this increase of weight of their wool.—He very judiciously proposes to substitute a less hurtful salve than that commonly used;—but even that is unnecessary.

as the tar adds considerably to the weight of the fleece, it tends to increase this misfortune; and therefore is more highly injurious to this kind of sheep than it would be to such as are older.

MUCH more are those to be commended, who, with a view to prevent this inconvenience, cause all their lambs, especially if they are of the long-wooled sort, to be shorn about Lammas; as this makes them light and cheerful during the winter season, and prevents many of those disorders to which the others are subjected, as I have often experienced. In particular, it is the only effectual method of preventing the wool of these sheep from loosening from the body in tufts in the spring, which can hardly be prevented in any other way.

THESE reasons, one would imagine, might be sufficient to satisfy any one that *smearing* is at best but an useless operation; and as it is always attended with a considerable expence, and no little trouble, it might be imagined, that some would be induced to try if it could with safety be omitted, even were the practice so universal as to afford no example of this having been ever done. But when we add to this, that the experience of so many extensive countries, in

in which sheep are reared to as great perfection as in any part of the world, shows that it can be omitted without the smallest inconvenience; we can find no other apology for those who still blindly continue it, but that obstinate perseverance in an old unaccountable practice, which no reason can authorise; although they must be sensible that it is attended with very pernicious consequences in some respects; as it renders the wool totally unfit for many kinds of manufactures, and makes it more expensive and troublesome to prepare for any purpose whatever; which has given occasion to our old ballad-makers to compose a song, the burden of which is, *Tarry woo' is ill to spin.*

If you are as heartily tired of this disagreeable task of finding fault as I am,—you will be happy to be here relieved from it.—In hopes of which, &c.

OBSERVATIONS

NATIONAL INDUSTRY.

LETTER NINTH

C O N T E N T S.

Recapitulation.—**Inferences.**—The climate of Scotland compared with that of England:—proved to be better adapted for rearing fine wool than it is.—A comparison between the profits that would accrue to the farmer by rearing cattle or sheep in the Highlands of Scotland.—The advantage greatly in favour of sheep.—If sheep were kept there, a greater number of cattle could be likewise maintained in these mountainous districts than at present.—The inhabitants of that country are at present poor,—on which account it is not nearly full stocked:—consequences that result from hence.—This poverty is daily encreasing.—Breeding sheep and manufacturing their wool the only practicable means of remedying this.—The promoting these strongly recommended to gentlemen of landed property in the Highlands.—The ease with which it might be accomplished pointed out.—Impediments to be removed.—A plan for destroying foxes and other destructive vermin.

OBSERVATIONS

ON

NATIONAL INDUSTRY.

LETTER NINTH

TO MR. *** LONDON.**

DEAR SIR,

October 24, 1775.

IF we take a retrospective view of what has been said in this series of letters, I hope you will now remain satisfied, that the distress of the inhabitants of the Highlands, and the poverty of Scotland in general, has been chiefly occasioned by an inattention to the only means that nature has provided these countries with for supporting the inhabitants, the establishing
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proper manufactures among them, which might render them useful members of society, and happy in the enjoyment of the blessings of life;—that such manufactures alone are fitted to produce this salutary effect, as draw their materials from the soil of the country itself, as these manufactures only can in the highest degree promote the interests of agriculture, without which manufactures must be precarious, and commerce for the most part destructive;—that the nature of the country does not admit of rearing flax in abundance, and that the attempts that have been made to introduce that crop, have been evidently detrimental to the country;—that, on the contrary, the rearing of wool for that purpose would be highly beneficial in this respect;—and that although Scotland hath not hitherto been remarkable either for the quantity or the quality of the wool produced in it, this has arisen entirely from accidental causes, that might be easily removed by a little care in the inhabitants. It now remains that we proceed to enquire, if it possesses any positive advantages in this respect over the countries around us, that might serve as an incitement still more strongly to rouse us to engage with alacrity in improvements that so evidently tend to the good of the public, and the felicity of numberless individuals.

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AND as I hope you are satisfied that I have hitherto proceeded with a steady impartiality in discussing the several topics that have incidentally come in the way, and have on no occasion warped any facts to serve a particular hypothesis, I flatter myself that I shall be able to pursue the same steady and impartial conduct in what remains to be said relating to this subject. I therefore rather take notice of this circumstance here, because I am sensible, that in the whole course of these lucubrations, facts have so exactly corresponded with the plan I have been obliged to adopt, that a stranger would almost be tempted to think they had in some cases been fabricated for the purpose of supporting a favourite theory; whereas the reverse of this is the truth. I began with a serious disposition to discover if possible what might be the most proper steps to be pursued to free my countrymen from misery and want.—I have probed my way all along, as the French would say, *la sonde à la main*; have examined every circumstance with the utmost attention; and have been gradually induced, by an amazing concurrence of facts, to fall into the opinion that I have at length adopted.

I NEED not, however, observe to you, who already know full well the natural warmth, and almost enthusiasm, of my disposition, that it is possible,

possible, after I have once been induced to form a decided opinion on this head, I may be on some occasions hurried perhaps rather too far. I am on my guard against it, and trust you will seldom find occasion to complain on this account. — But as you are cool and impartial, I depend upon meeting with your friendly correction if in any case I should transgress. In the firm persuasion of which I proceed with alacrity to the remaining part of the task I have assigned myself.

It has been proved already, p. 164, that wool of the best quality can only be produced in countries where the variation between the heat and cold of different seasons of the year is but very inconsiderable; and the advantages that Great Britain possesses in this respect above the continental countries of Europe, was at the same time pointed out.

BUT although every part of this island partakes in some degree of this peculiarity of climate, yet the northern parts of it are much more eminently distinguishable by it than the southern. For as England is not only larger in itself, but also approaches much nearer the continent than Scotland does, its climate in some respects more nearly resembles that of a continental

nessful country: whereas Scotland, being in itself such a narrow tract of country,—so deeply indented by various arms of the sea, and so far disjoined from the main-land, enjoys all the peculiarities of an insular situation in a much higher degree than England. On this account the heat of the summer season is more moderate in Scotland, and the cold in winter less intense, than in England; so that the variations of heat and cold are far less considerable here than in the southern parts of Britain: which, however inconvenient it may be in respect to raising grain, and many other particulars, must be allowed to be a very considerable advantage in our favour with regard to the rearing of sheep, and growth of fine wool.

You will not, I believe, be disposed to doubt, that the heat is more intense in England than in Scotland during the summer season; but it is possible you may think it a little improbable, that the winters are more mild in the northern than in the southern parts of the island. The fact is however not less certain; although, for obvious reasons, it has been far less attended to than the other; so that the general sense of mankind cannot be appealed to with such propriety as in the other case; but there are not

wanting particular proofs sufficient to establish its certainty without a doubt.

WRITERS on meteorological affairs having seldom extended their observations so far to the northward, have been surprised to meet with instances of what they thought surprising mildness in these northern regions, which they have enumerated as a kind of wonder almost approaching to a miracle; although these instances they have taken notice of as particular exceptions to the general run of seasons, were in no respect different from what happens for ordinary, and might have been expected by those who had a sufficiently comprehensive view of the laws of nature in this respect.

Thus we find that in the year 1709, when the frost was so intense at Paris as to freeze even spirituous liquors, and over the rest of Europe was so severe as to destroy many common plants, —the French academicians remarking with surprise, that while the rest of Europe suffered so severely, the northern parts of Scotland escaped without having been almost at all affected with that general calamity.

AGAIN, in the winter 1740-41 we meet with the same remark, and the truth of it confirmed by

by numberless examples collected with great care by the ingenious Mr. Miller, in his Gardener's Dictionary, article *Frost*, to which I refer you for satisfaction on this head; only taking the liberty here to remark, that the roots of artichokes, were so entirely destroyed in every other part of Europe, that, had it not been for Scotland, which furnished plants to all the nations around, it was doubtful if the very species of this plant might not then have been lost.

ANOTHER instance of the same kind, although in a lesser degree, occurred in our own time, which I deliver to you upon my own authority, — the fact being so recent as to admit of being easily proved or refuted by numberless persons still alive who must remember it. In the winter 1762-3 you will remember, that the frost was so intense in England as to freeze the Thames entirely over at London, where the ice became so strong as to be able to carry booths that were erected upon the ice which remained for several weeks together. At that time I happened to be residing in a northern part of Scotland, at the distance of some miles from the sea; and having observed the news-papers regularly, I could not help remarking with some surprise, that the cold where I lived then, during all the time,

was so very moderate, that even inconsiderable hills were scarcely frozen, nor did it almost at all interrupt the ordinary operations of agriculture.

NEITHER need we look upon this as a singular case. For it is well known to every one who has occasion to be acquainted with both places, that when the county of Northumberland in the neighbourhood of Newcastle, is covered with snow to the depth of two or three feet, there is for the most part hardly as many inches depth of snow in the counties of Murray and Caithness; and still less in the western isles, where snow is seldom known to lie for a week or ten days together. In the higher inland parts of the country the snow does indeed lie longer than on the sea-coast every where: but as this is equally observable in England as in Scotland, the variation in this respect will always be in proportion to the height and distance of any place from the sea in both countries. And as the sea-coast in Scotland bears such a large proportion to the whole, there can be no doubt, that the winters are in general much milder in the northern parts of it, and in the isles, than they are either in the south of Scotland or in England in general; and that the surface of the country

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country is not covered with snow near so long in the first as in the last of these countries. It is not about the objection made by some, that it has been shown in letter third, p. 68, that if wool were reared in abundance in the Highlands, there would be a great probability that a spirit of industry and manufactures would naturally prevail among the people. And if the observations that have been made in this course of letters are just, there can be no longer any doubt, but that wool might be there raised in abundance, of as fine a quality as could be desired. But before we can with propriety advise the farmer to make choice of sheep rather than of cattle for his general stock, it will be necessary to enquire which of the two would in all probability afford him the greatest profit, and most steady and certain returns.

NATURE has intended that sheep should live upon drier and less succulent vegetables than

* Be pleased to observe, that I here speak of the country in general, and by no means intend that this should be understood of such places as the Isle of Wight, and the southern shores of Kent, Sussex, Hampshire, Devonshire, and Cornwall, which, from their proximity to the sea, must have very mild winters; but of the more internal parts of the country, as Wiltshire, Somersetshire, &c. compared with Caithness or Sutherland, Sky or Lewis, &c.

cattle;

cattle; they therefore, in general, thrive better on mountains, where dry kinds of grass are usually produced, than cattle do; which, for the most part, delight to pasture in vallies, where more tender vegetables are produced. But as the greatest part of the Highlands of Scotland consist of hills that produce dry vegetables, it seems probable that they would be better fitted for rearing sheep in general than cattle; as the first would eat a great many plants which are not at all touched by the latter. On which account it is probable that a much greater weight of meat might be produced in these pastures if sheep were kept upon them, than when cattle only are grazed upon them.

But although it should be supposed that there would be no difference in this respect, it will not be disputed, that even in pastures that are ever so well adapted for cattle, at least an equal weight of mutton could be reared upon them as of beef. And as I presume these two kinds of meat are of equal value, let us examine, upon this footing, which of the two it would be most the interest of the breeding farmer to rear.

SUPPOSE, then, that a farmer has pasture sufficient to keep a hundred pounds worth of cattle,

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cattle, and he sells annually one fourth part of these; his annual income from them would be twenty-five pounds. Upon the foregoing data he could keep an equal value of sheep, and consequently draw an equal price for those that he sold annually; so that in this case also he would draw twenty-five pounds. But as, on this supposition, he has also the wool of his flock to dispose of annually, we must make allowance for the value of the fleece; which may be computed, even where the wool is but of an indifferent quality, at one fifth of the total value of the lean flock, including the young sheep: and if the wool were of the very best quality, it might be worth the half of it. So that at the most moderate computation he could sell twenty pounds worth of wool; which added to the other twenty-five pounds, make forty-five in all,—being twenty pounds, or eighty per cent, clear profit: so that he would draw nearly double the profit from sheep that he can do for cattle independent of the benefit he might reap from other circumstances.

The English are so sensible of the superior advantage that they derive from the rearing of sheep instead of cattle, that they have for many

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ages in a great measure neglected the last, depending upon Ireland and Scotland for a supply. It surely, however, behoves those who are materially interested in the produce of the Highlands, to consider well how far it is expedient in them to forego such solid advantages as they might derive from thence.

But if the English derive greater advantage from rearing sheep than cattle, even in their rich and fertile fields, the difference in this respect must be much greater to the inhabitants of the Highlands of Scotland. For so long as they shall continue to rear cattle chiefly, the number of beasts fed upon their hills must be but very inconsiderable. For, to keep their cattle from starving, in case of an unusual fall of snow, it becomes necessary for every farmer to be provided with some hay to give them on these occasions; or to run the risk of losing his whole flock. And as they have but little ground to spare for hay, they are not at liberty to keep with safety more cattle than this small stock of provender is sufficient to sustain on these emergencies. But as sheep can be sustained on dry heather tops, or short grass, upon which cattle could

could not live, they are on hilly countries, in far less danger of perishing by storms of snow than cattle are, and therefore require far less provision of dry food for winter than these do.

Thus, supposing the country remained in the same state it is in at present in all other respects, a much more valuable stock could be safely kept of sheep than of cattle: but if the attentive farmer should propagate whins for their winter-sustenance, as has been recommended in letter fourth; as many sheep could with safety be kept in winter as the pastures could maintain in summer; which would amount to four times the value of the cattle that could be sustained in the same places.

Now is this the only benefit that would arise from rearing sheep instead of cattle on these hills. For it has been remarked, that in all cases where sheep have been substituted for cattle, the pasture has been in a short time improved; inasmuch that those hills which were continually covered with heath, in a few years assume a pleasant verdure, and carry a much greater quantity of short nourishing grass than formerly.

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This has been lately experienced in many parts of Perthshire and Argyleshire, where their flocks of sheep have been of late much increased.

HITHERTO it has been supposed, that sheep should be substituted instead of cattle; but you will now, I hope, perceive, that there is no necessity for banishing the one to make room for the others, as it is sufficiently obvious from the foregoing remarks, that a very great value of sheep might be kept on these Highland hills, without diminishing the number of cattle in the least. Nay, should it be found expedient in other respects to increase the number of their cattle, these very sheep would put it in the power of the inhabitants to do this with much greater safety than they could attempt it at pre-

* A sensible gentleman writes thus to Mr. Loch: "As I am not sufficiently acquainted with wool, to say any thing of the quality of what is produced in the above district (Argyleshire), I shall say nothing of that; but an easy enquiry will ascertain it; but can say, that, if it improve as much as the sheep have mended the pasture on the hills they feed upon, it must soon be excellent; for, from being covered with dry sapless heath, they are converted into a beautiful verdure, obvious at several miles distance; so that they can be distinguished from those that are not under sheep." *Loch's Letters*, p. 31.

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sent. For as the dung of these sheep, if judiciously folded, would greatly enrich such patches as admit of being cultivated; these patches, if laid down to grass in good order, would encrease the stock of winter-provender for his cattle, so as to enable the farmer to keep an additional number of cattle, should he so incline.

In this manner the country could not fail to be improved, and the farmer be rendered more comfortable in his circumstances, and become a much more respectable member of society than he is at present.

In all the foregoing calculations it has been supposed, that the Highlands are as fully stocked with cattle at present as the nature of the country in its present state will admit of. But those who are best acquainted with the present state of the Highlands know full well that this is far from being the case. For as the people who now inhabit these countries are exceedingly poor, they are not able to purchase stock* properly to consume the produce of their farms,

* By stock here is meant live cattle, which are usually called *fact* in grazing countries.

so that you may frequently meet with very extensive tracts of land with hardly any stock at all upon it; the number of cattle being usually rather in proportion to the richness of the soil, than to the quantity of food that his farm produces. And as the inhabitants, so long as the present system continues, must become gradually poorer and poorer, the prospect that this affords is so truly alarming, as ought to rouse the gentlemen of property there to exert themselves to the utmost to stop that growing evil, before it becomes so utterly intolerable as totally to depopulate the country, and render their possessions a miserable desert, instead of being the seats of opulence, festivity and joy.

And as there seems to be no other way of doing this so easily as by increasing the number of sheep, and encouraging the manufacture of their wool among the inhabitants, they ought surely to apply themselves to promote manufactures with an unremitting attention. For if the farmers had a greater proportion of sheep, carrying good flocks of fine wool, the profits they would derive from thence would enable them gradually to increase their number, so as
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in time to have a flock of animals proportioned to the product of the fields they reared; which would put it in their power to yield to the proprietor, without incommencing themselves, in some cases ten times the rent that would at present reduce them to misery and want.

In their attempts of this kind the gentlemen

would meet with one favourable circumstance, that is but seldom experienced in attempts towards improvements of any sort. For the common people, finding that wool is amongst the most saleable commodities they can rear, would almost to a man be disposed to co-operate heartily in every plan that had a tendency to facilitate the rearing the useful animal which affords it. So that almost all that would be required of the gentlemen, would be to concert and put in execution proper plans for removing the principal obstacles that prevent the rearing sheep in abundance at present, and taking care to put it in the power of the inhabitants easily to obtain sheep of the proper kinds, from the rearing of which they could reap most profit.

At present the greatest bar to the rearing of sheep in the northern parts of Scotland, is the im-

immense number of foxes and eagles that abound through the greatest part of these extensive tracts, so that the inhabitants are under the necessity of always housing their sheep at night, which tends greatly to hurt the quality of the wool, and to impair the health of the animal. And as it is impossible to provide proper house-room for great flocks of sheep, this proves a most effectual bar to the increasing of their flocks throughout the greatest part of the Highlands.

In some counties the gentlemen have entered into an association to tax themselves for raising a fund to be distributed in premiums for killing these vermin. But as this practice has not yet become entirely general, it is to be feared that some counties may relax a little in their efforts to this purpose, unless the neighbouring gentlemen follow their example. But if a county should be found where the gentlemen are so dead to all sense of public spirit, or so blind to their own interest, as to refuse to join in such a salutary association, it would be folly in others to suffer themselves to be losers, because these neglect to do their duty. Would it not be more becoming in them, publicly to stigmatize the inhabitants of those counties as enemies to improvements, and

and leave them to that contempt that ought to attend them, while others with a manly boldness advance in the right road to riches and plenty.

When these vermin are very numerous, a small price set upon each head may be sufficient; and when they begin to decrease, that price may be gradually raised without raising the fund of payment. — The lowest price on the head of a full-grown fox or eagle in any part of Scotland ought to be five shillings. — If it is more, the diligence of individuals will be increased, so that they will be the more quickly destroyed. I know that in some counties a guinea is already given for a fox's head. — Were all the others come to the same state, the evil would be quickly removed.

But whatever is the price to be given, there ought to be a very material difference between the premium for killing a bitch-fox with young, and a fox of any other sort: nor ought the same price to be paid for the whelps of that year before Martinmas, as for any other fox; — because if the same price is paid for young or old, male or female, those who make it their business to hunt

hunt for them, will spare the females while with young, that they may have a chance of getting the whelps; by which means many will escape that might have been destroyed.

WHAT I apprehend would be the most efficacious plan for suddenly destroying them, would be to fix a very high premium on the head of every female with young, — a more moderate price on other full-grown foxes, and a smaller still upon whelps of that year. — Suppose a guinea for every female with young, — half a crown for every whelp of that year before Martinmas, and five shillings for every other kind of fox, keeping nearly at these proportions for any higher or lower price that could be afforded.

THE good effect of this mode of distributing the premiums would be, that as there was such a strong temptation for seeking the females when pregnant, every art would be devised for discovering their haunts at that season of the year, and killing them, so that very few would escape; — and thus very few young ones would be produced. And as the male usually frequents the same haunts with the female at that season,

many

many of these would naturally fall in the way, and be killed at the same time. Or if they escaped, when the rutting-season approached, there would be so few females, that the males would fight about them, and destroy one another; or they would withdraw to other parts of the country, where they could pursue their pleasures with less interruption.—The small premium that could be obtained for whelps would be another reason for endeavouring to destroy them while yet in the mother's womb.

THE premiums might be paid at a certain season of the year,—suppose Martinmas and Whitsunday,—a pair of ears being produced as a voucher for every fox killed; except for the females as above,—with regard to which the attestation of a parson, or gentleman in the county, declaring that it was cut up in his presence, and that he saw it was with young, should be produced along with the ears to entitle to the premium.—I am, &c.

THE NATIONAL BUREAU OF STANDARDS

WASHINGTON, D. C. 20540

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OBSERVATIONS

ON

NATIONAL INDUSTRY.

LETTER TENTH.

S 2

C O N T E N T S.

Benefits that have resulted to society from a proper degree of attention in the inhabitants of any one country to improve the natural advantages it possessed,—or to supply its defects by transporting from distant regions the useful animals or vegetables of which they were not originally possessed,—exemplified in many kinds of fruit-trees, fallads, and other esculent plants,—hops, potatoes,—rhubarb, &c.—as also animals,—poultry of various sorts,—horses, &c.—History of the silk-worm, and its various migrations in Europe.—Inferences from this induction:—There is no reason to doubt but our breed of sheep may be improved.—This cannot be effected without the concurrence of men of power and influence.—Arguments to induce these to attempt it.—Scotland better adapted for carrying on the woollen manufacture than England,—and why.—A view of the peculiar advantages that the parish of Halifax in Yorkshire enjoys in this respect,—its present flourishing state, and the amazing encrease of its inhabitants of late, in consequence of possessing these advantages.—The North Highlands of Scotland compared with the parish of Halifax.—An accurate hydro-geographical description of that part of the country.—Result of this very accurate comparative view:—That the parish of Halifax is possessed of no natural advantages for carrying on the woollen manufacture that this part of the country does not possess in as high a degree;—and that these Highlands enjoy many other great advantages for carrying on this manufacture that no part of Yorkshire can lay claim to.

OBSERVATIONS

ON

NATIONAL INDUSTRY.

LETTER TENTH.

TO MR. ***** LONDON.

DEAR SIR,

October 30. 1775.

IT would seem that the creator of this universe, with a view to promote that friendly intercourse between different nations on this globe, which tends so much to civilize mankind, and to improve useful knowledge, had denied to every nation *some* of the principal conveniencies of life that he had bestowed upon others; which might serve not only as a spur to the inventive faculties, but also as a bond of union between different communities.

Thus

THUS we learn from historical records, that Italy, which has long been in possession of all the fruits that are known in temperate climates, was originally unacquainted with many of the most valuable kinds. Lucullus first brought cherries from Pontus, and planted them in his princely gardens at Rome; in which country they have ever since flourished in as great perfection as in their native climate. And in like manner had been introduced into Italy at different times, the pear (*Malus, Pyrus, or Epyrus*) from Epirtus;—the peach (*malus Persica*) from Carthage;—the apricot (*malus Armeniaca*) from Armenia, and the quince (*malus Cydonia*) from Syria, as their names sufficiently show. These having been in time naturalized to that country, were by the Romans transported into all those regions which came under their dominion; by which means they were gradually dispersed over the northern and western parts of Europe, where many of them now flourish as well as if they had been natives of these countries. Thus does a spirit of conquest, that most destructive of all dispositions of mind, sometimes become the means of diffusing blessings to the posterity of those very people whom it enslaved, and loaded with misery and chains.

But

BUT commerce effects the same salutary purposes in a more gentle and less violent manner. By means of it, many of the fruits and roots of the most distant countries have been naturalised in Europe. The tree is perhaps still alive in China that afforded the seeds from which the first sweet oranges were reared in Portugal; although these have since prospered so abundantly, that were it not for the name of *China oranges*, which they still retain, it is probable the inhabitants of Portugal might in time imagine they were natives of their own country. — Nor is it above thirty or forty years since the first handful of rice was introduced into Carolina; where it has prospered so abundantly, as to enable that country to supply almost all the markets of Europe with this valuable sort of grain.

As to ourselves in this island, about the beginning of the sixteenth century, we had neither sallads, cabbages, turnips, carrots, nor any of those garden-roots that now constitute such a principal part of the food of the lowest people in Britain. Nor was it till long after that time that the collyflower-plant was introduced into our gardens, although it is well known that this
plant

plant cannot now be found in such perfection in any other part of the globe.

ABOUT the middle of the same century hops, and pippins, were first brought into England, as also pale gooseberries,—a fruit that is found to prosper better in our northern climate than than in any warmer region. Possibly that plant might be then preserved in a green-house, as were the first plants of the larix-tree, that were introduced into this country between thirty and forty years ago, although it is now known to be one of the most hardy trees that is found on the face of the earth.

THESE are instances that may not come within the reach of every one.—But surely there is no man so ignorant as not to know, that the potatoe, this most useful of all common roots, was introduced into Europe from a very distant region, almost within this present century; and although it now furnishes the principal part of the food of the inhabitants of almost every part of the country, there are many young people who remember when it was only cultivated in the gardens of the curious, and presented as a rarity. And not ten years ago,

ago, the rhubarb-plant was reckoned so peculiarly confined to the regions of Tartary, that the Russian emperors regulated the quantity brought to market, and fixed the price, in the same manner as the Dutch at present do the cloves and mace, and made us pay annually near two hundred thousand pounds for this article alone; which is now found to grow in our gardens to as great perfection as in any other part of the earth, and will ere long become as common as the wild dock, if it is not attended to.—I hope the time is not far distant, when we shall be able, by means of our colonies, as effectually to serve ourselves with the Dutch spiceries; as some attempts for that purpose are now carrying on under the direction of a public-spirited gentleman, who does honour to his country; and if the undertaking be conducted with judgment by those who may succeed him, can hardly fail of success*.

Not

* “ General Melvil, when Governor of St. Vincent’s established in that island a public experimental garden, and put it under the care of the ingenious Dr. George Young, with a view to try what valuable plants might be reared with profit in that island; who brought a certificate from the first magistrate in St. Vincent’s, that he had growing in this garden in the month of May 1772, 140 healthy plants

NOR is it with respect to vegetables alone that we have reaped improvement by our communication with other nations; seeing many of the animals that are now familiar to us, have been brought from very distant regions.—The Turkey is a native of Asia, as its name imports;—the Peacock was first introduced from the East Indies;—and the Pheasant is a native of Asia Minor, which has only been introduced to one of the coldest places in Scotland within these very few years, where it thrives as well as the Ptarmigan and Grouse.—Birds that have always been natives of our desert hills, even our common cocks and hens, which are now found at every barn door, were originally brought from Asia. The horses of Barbary,—Turkey,—Persia,—Andalusia, and Ara-

plants of the true cinnamon-tree,—besides many other valuable plants, among which are Logwood,—Turmeric,—East India Mangoe,—Tobago Nutmeg,—Sesamum,—Cassia Fistula,—Vanilloes,—Anotto,—China Tallow-tree," &c.—*Political Survey of Great Britain*, vol. 2. p. 681.

Since that time the French have made an attempt to obtain young plants of the spiceries from the Dutch settlements; and have succeeded, notwithstanding the jealous watchfulness of that suspicious nation; so that there is little room to doubt but the Dutch will soon be deprived of the benefits of that important monopoly, which they have so long enjoyed.

bia,

bia, have been familiarised to our island; and by a judicious management, have produced to us a breed of horses that cannot be equalled in any part of the world.——And many of the fallow-deer * that run wild in our parks, are originally natives of the warm and fertile plains of Indostan, almost within the tropics.

I might here also take notice of the many European animals that have been with success introduced into our settlements in Asia, Africa, and America.——I might mention the almost total want of quadrupeds of every sort in the newly-discovered island of Otaheite, which enjoys a temperature of climate as favourable for all the domestic animals of Europe, as any country in this northern hemisphere; and will no doubt, in time, receive great benefit from those that may be transported to it. But I rather chuse to exemplify this by the history of the most delicate useful animal that has been reared by man, the silk-worm; as it affords the most striking proof of what may be achieved by human industry and application.

* The spotted fallow-deer were brought from Indostan by K. James I.

BEFORE the time of Tiberius Cæsar it was imagined, that China or Persia were the only parts of the world where this delicate reptile could be reared; and the cloth wove of its web was sold for its weight of gold, and therefore could only be procured by princes, and the chief magistrates of kingdoms. But the luxury of the Roman court offering such a high premium to adventurers, some daring genius, about the time of Augustus and Tiberius, ventured to transport the eggs into Greece, where they were found to hatch, and the insect to thrive extremely well. In time they were transported to the neighbouring country of Asia Minor; but it was not till several ages afterwards, that they were naturalized to Italy by the enterprising spirit of the Franks, who founded a kingdom in these parts. From thence they travelled westward into Spain: and France, which now derives from them a considerable commerce, owes it entirely to the enterprising spirit of Henry IV. who, contrary to the opinion and advice of the sagacious Sully *, persisted in his resolution of having the experiment fairly tried; which succeeded, in all probability beyond his

* See Sully's Memoirs *passim*.

most sanguine expectations. Nor is it at all certain but that the next century may see them upon the borders of the Baltic, as the King of Prussia is said to have lately tried the experiment with success.

BUT however that may be, we have from this example a most satisfactory proof, that animals even of the most delicate sort, may be successfully reared in countries far distant from that in which they were originally found, and under climates considerably different from what these enjoyed.

IN the time of Tiberius Cæsar, it was no doubt deemed a bold thought, and considered as an exceeding hazardous undertaking, to attempt to rear this animal in Greece: but the man who should have then proposed to carry silkworms into the northern regions of Gaul, in the hope of breeding them there with profit, would have been looked upon as altogether out of his senses. Yet future experience has sufficiently shown, that, had this experiment been conducted with the necessary skill and caution, it would happily have succeeded. How much less venturous is it then in us to think, that by
proper

proper attention and skill, as fine wool might be raised in the Highlands of Scotland, as on the Asturias of Spain, or the frozen mountains of Thibet? as, from the minute investigation that has been made with regard to this subject in the preceding series of letters, it does not appear that there are *any* reasons to make us dread the success of any fair trial that might be made with this view.

BUT reasoning alone is not sufficient to give to Scotland the many blessings that would accrue to it should this ever come to be the case. For, without an active exertion in those who are peculiarly interested in the prosperity of the country, and in a sphere of life sufficiently elevated to give spirit to any great undertaking, we may still, like Tantalus, labour under a heavy load of poverty and distress, although the remedy to all our ills be constantly within our view; being unable to attain it by our own feeble efforts, unless aided by some powerful and friendly hand who may put it within our reach. But the time I hope approaches when such assistance will be given as to raise this drooping country from her languid condition, and to give her that strength and firmness which
the

the natural soundness of her constitution may give us room to hope for, and that weight in the political scale of Europe that her intrinsic advantages ought naturally to ensure.

ENGLAND has long enjoyed the woollen manufacture entirely unrivalled by the Scots; although this country is almost in every respect better adapted for carrying it on with success than England. For as running water is indispensably necessary to many branches of that manufacture, a country which abounds with mountains and living rills, is, beyond all doubt, more peculiarly calculated for that, than one which is more level. And I leave any one who has seen the limpid rapid rivulets in Scotland to compare them with the dead muddy waters in England, and tell on which side the balance falls. It is chiefly on account of the mountains, and the running waters these produce, that the parish of Halifax in Yorkshire has of late flourished so much in the woollen manufacture; while, in many other places of England, on account of the want of this necessary convenience, the manufactures have gradually declined ever since the other European powers have come into competition with us,
and

and reduced the prices in foreign markets. But as you may not perhaps be fully aware of the vast importance of this circumstance to the woollen manufacture, I shall transcribe a passage or two from a very sensible writer on this subject, which will place it in the proper point of view.

“ In the course of our road, (says he), among
 “ the houses, (this was between Blackstone edge
 “ and Halifax), we found at every one of them
 “ a little rill or gutter of running water: if the
 “ house was above the road, it came from it,
 “ and crossed the way to run to another; if the
 “ house was below us, it crossed us from some
 “ other distant house above it: and at every
 “ considerable house was a manufactory, *which*
 “ *not being able to be carried on without running*
 “ *water*, these little streams were so parted and
 “ guided by gutters or pipes, that not one of
 “ the houses wanted its *necessary* appendage of a
 “ rivulet.

“ AGAIN, as the dying-houses, scouring-
 “ shops, and places where they used this water,
 “ emit it tinged with the drugs of the dying-
 “ vat, and with the oil, the soap, the tallow,
 “ and

“ and other ingredients used by the clothiers in
 “ dressing and scouring, &c. the lands through
 “ which it passes, which otherwise would be
 “ exceeding barren, are enriched by it to a de-
 “ gree beyond imagination.

“ THEN, as every clothier must necessarily
 “ keep one horse, at least, to fetch home his
 “ wool, and his provisions from the market, to
 “ carry his yarn from the spinners, his manu-
 “ facture to the fulling-mill, and, when finish-
 “ ed, to the market to be sold, and the like;
 “ so every one generally keeps a cow or two
 “ for his family. By this means, the small
 “ pieces of inclosed land about each house are
 “ occupied; and by being thus fed, are still
 “ farther improved from the dung of the cattle.
 “ As for corn, they scarce sow enough to feed
 “ their cocks and hens.

“ SUCH, it seems, has been the bounty of
 “ nature to this country, that two things essen-
 “ tial to life, and more particularly to the busi-
 “ ness followed here, are found in it, and in
 “ such a situation as is not to be met with in
 “ any part of England, if in the world, beside:
 “ I mean, coals and running water on the tops
 “ of the highest hills,” &c.

I SHALL soon have occasion to show, that our author was a little out in his conjecture in the end of this paragraph, and shall point out some places in this island where all those advantages are enjoyed without many of the inconveniencies that accompany them in the parish of Halifax. In the mean time we may observe, that in consequence of these advantages, the inhabitants have encreased their manufactures of late to an amazing degree; and with it the number of the inhabitants has also encreased.

FROM the same writer we learn that, "in the year 1443, there were only thirty houses in the parish of Halifax; but in the next century it was much encreased: for history tells us, that Queen Elizabeth being petitioned by the inhabitants of Halifax to grant them some privileges, set forth, as an instance of their loyalty, that no less than 1200 * young men went out armed from this one parish, and, at her Majesty's call, joined her troops to fight

* The author here has 12,000; which I have supposed a mistake,—as Camden, who was in the parish of Halifax after that period, computes the inhabitants then only at 7000 in all.

“ the Popish army, then in rebellion under the
 “ Earl of Westmoreland.

“ If they then, (continues he), were so po-
 “ pulous, what must they be now their trade is
 “ so vastly enlarged by the great demand of
 “ kerries for clothing the armies abroad, (this
 “ book was written in the year 1746)? Some
 “ maintain, that it is encreased a fourth at least
 “ within these fifty years, from their having
 “ entered on a manufacture of shalloons, which
 “ were never made in these parts before, in
 “ any quantifies. And of late years it is still
 “ more encreased, by the people of a neigh-
 “ bouring part driving away about 4000 Irish
 “ manufacturers, who, with about 2000 others
 “ accompanying them, settled there.” And as
 the manufactures of that place have continued
 to encrease at a very surprising rate, we may
 form some idea of the populousness of that pa-
 rish at this time. In the year 1748, our author
 tells us, that this single parish contained twelve
 or thirteen chapels of ease, besides about fix-
 teen meeting-houses of different sects of re-
 ligion; so that our author might well ex-
 claim:

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“ As

“As the vicinage is thus far extended, and
 “so populous, what must the market be which
 “supplies this vast number of inhabitants? and
 “yet these *are all brought from other parts of the*
 “country. For as to corn, they sow little, and
 “they feed very few oxen or sheep; *and as they*
 “are surrounded with large manufacturing
 “towns on every side, all of them employed,
 “like themselves, in the clothing-trade, they
 “must necessarily have their provisions from
 “other more distant parts.

“THE consequence then is plain, their corn
 “comes up in great quantities out of Lincoln
 “and Nottinghamshire, and the East Riding;
 “the black cattle from thence, and from Lan-
 “cashire; sheep and mutton from the adjacent
 “counties every way; butter from the North
 “and East Ridings; and cheese out of War-
 “wickshire.

“THUS one trading manufacturing part
 “of the country, in a barren soil, gives and
 “receives support from all the countries round
 “it.”

I HOPE you will excuse me for giving you
 this long quotation almost entire, as it so clearly
 points

points out the circumstances that are most essentially necessary for carrying on the woollen manufacture with success, as well as the great benefits that redound to a country itself, and the influence it has on the neighbouring countries, when a spirited manufacture is introduced into it.

BUT as our very ingenious author had not the means of being informed with absolute certainty of the increase of the inhabitants of this parish, and its sudden exaltation to the very elevated rank it now holds in Britain,—I shall just observe, that from the Reverend Mr. Watson's history of the parish of Halifax we learn, that by an accurate survey made in the years 1763 and 1764, it was then found to contain 8244 families; which at only five to each family, amounts to 41,220 inhabitants; so that this is perhaps the most populous parish in the universe.

THIS surprising number of inhabitants is to be attributed entirely to the woollen manufacture in these parts, which only began to be established there about the middle of the fifteenth century; before which period it was one of the
least

least populous, as being one of the most barren and uncomfortable parts of England. From the same author we learn, that about the year 1443, there were only thirteen houses in the lordship of Halifax; that in a hundred and twenty-three years after that they amounted to five hundred and twenty, and in little more than two hundred years more to one thousand two hundred and seventy-two;—so that in little more than three hundred years, the inhabitants had encreased to ninety-eight times the original number, wanting a very small fraction.

—And it is probable that other divisions of this extensive parish have encreased in a much greater proportion; being still more barren and less accessible than this is; the greatest improvements having taken place in the most wild and mountainous part of the country, which Camden has described to be “*solum sterile, in quo non modo commodo vivi, sed vix vivi possit.*”

PERMIT me now to draw a short parallel between this parish and many parts of the Highlands of Scotland, with a view to discover which of them are naturally possessed of the greatest advantages for carrying on the woollen manufacture.

IN

IN most mountainous countries the hills rise gradually above one another to a great height as you recede from the sea, so that the access to the internal parts of the country is every way steep and difficult. But throughout the greater part of the North Highlands * of Scotland, although the country may in strict propriety be called mountainous, nothing of that sort is observable. Like the deep seas in the bay of Biscay, or near the cape of Good Hope, when agitated by a storm, although the surface, if considered in one general view, may be called level; yet when viewed nearer, it is found to be scooped out into immense cavities, or heaped up into innumerable ridges of stupendous height, the alternate successions of which fill the most daring mind with horror and affright.

SUCH, in some measure, is the situation of these Highlands. It seems to be an immense plain, that has been by nature, in some of her wanton freaks, thrown up into large and irregular ridges of mountains, with wide and deep furrows between them, which run far back-

* By *North Highlands* is here understood all that part of Scotland to the north of Lochness.

wards into the country in a direction nearly horizontal.

Hence it happens, that although the mountains sometimes boldly advance into the sea, and with their towering tops bid defiance alike to the fury of the tempest and the raging ocean; yet in other places these furrows are cut so deep, and run in such a level direction, as to admit the sea to flow through them into the very heart of the country, although skirted on every side by hills suddenly rearing their tops to a great height above them. These inlets are called by the Lowlanders *firths* or *firths* (*fretas*) and by the inhabitants of the Highlands *kiles*.—But on the West coast, where they are most numerous and extensive, they have obtained the improper appellation of *locks*.

From these larger furrows there branch off many others, the bottom of which are only elevated to a small degree above the level of the sea, which run back into the more inland parts of the country; being denominated *straths*, in the lowest part of which always flows a river of some sort, with a gentle current towards the nearest firth, or arm of the sea.

LET. X. NATIONAL INDUSTRY. 281

sea. And at the back of the next ridge of mountains runs another pretty level strath, in a direction often nearly parallel to the former.

Thus it happens, that the inhabitants of each of these straths or vallies,—the only habitable parts of the country, may always have the convenience of a level road to the sea, which is usually at no great distance; by means of which, the produce of the country might easily be emitted, and the goods they might want from abroad be brought to them with the greatest facility.

On each side of these straths the mountains ascend to a great height, rising from the plain with a very considerable angle of elevation, being only accessible by flocks and herds, or the wild animals of the desert; so that it is a matter of very great difficulty to form a passable road directly from the one to the other; the only free access to each being by the sea: so that those who want to pass from the one to the other are under the necessity of going along their own valley towards the sea, and after having turned the cape, if we may so name the head-land that divides them, returns through the neighbouring strath,

strath, upon level roads. On this account it can never be an agreeable place for those who wish to fly through a country in a post-chaise, which makes it but little attended to by modern travellers; but if it is commodious for the inhabitants, this inconvenience may easily be dispensed with.

FROM the hills on each side of these straths descend innumerable rills, streaming from rocks, o'erhung with shrubby brushwood; which gives a convenient opportunity of erecting whatever kind of mills may be necessary, and of carrying on every kind of manufacture that may require the assistance of running water. And as fine turf, or peat, abounds in every corner, the inhabitants have every thing that is necessary for carrying on the woollen manufacture in all its branches to the utmost perfection: nor would it be difficult to supply them with coals from the coast, should that be found necessary.

FROM this singular conformation of the country arise many consequences that have not been as yet remarked. — And by attending to it, we shall be able to explain in a satisfactory manner, several peculiarities remarked by travellers, that

that tend to perplex the mind of the uninformed reader.

It is usual for those who wish to form an idea of the degree of elevation of different parts of the country, to look at a map, and observe the course of the rivers, always concluding, that those places are the highest parts of the country where the rivers take their rise. But however just this may be in general, it would be far from giving a true idea of the elevation of many parts of the Highlands. For, however paradoxical it may appear, there is no doubt but the land is there sometimes higher within a small distance of the part where a river empties itself into the sea, than where it first takes its rise; because the mountains sometimes rise to a much greater height above the vallies near the coast, than they do in the inland parts of the country, these hills gradually sinking lower as you recede from the sea, so as sometimes to descend almost to a level with the plains in the internal part of the country.

AND although it is certain, that the bed of the river must always be higher at its source than at its mouth; yet this declivity is in many places

so inconsiderable as to amount only to a very few feet in several miles. So that although the small rills that descend by a short course from the mountains are rapid to an astonishing degree, the large rivers for the most part are smooth and gentle in their course. This is the reason, that when a sudden rain falls, the waters pouring down from the mountains on each side with great impetuosity, soon fill the bed of the river, which flowing more gently forward, cannot give it vent so quickly as it comes to it;—so that, like the Nile in the level plains of Egypt, the river overflows its banks, and fills the whole valley from side to side; appearing rather like a sea than a river. And like the Nile too, being gentle in its course, it leaves a rich slime behind, that greatly fertilizes the meads on each side the river; which by a little industry properly to draw off the returning waters, would form as rich pasture-fields as any in the world. But as these fields are liable to be overflowed at all seasons, they ought to be applied to pasturage alone; although the inhabitants too often at present attempt to turn them into corn.

You will probably be much surprised to find me give such a different idea of the rivers in this

this country from what you have ever been accustomed to hear; and probably may produce as an exception the river Spey, so much noted for its uncommon rapidity. You will, however, advert, that I speak here *in general*, and do not deny that examples of the contrary may sometimes be met with; but they are rare.——Nor will the Spey be readily admitted as a proper one.——Towards its mouth indeed, this river is extremely rapid, and continues so for some miles up the country;—but beyond that it differs not from other Highland rivers, flowing on with a calm and sluggish motion. As a striking proof of the level direction of this river in the upper part of its course, I shall only observe, that near Inverishie, some miles above Castle Grant, the river passes between two great rocks, which approaching pretty near together at one place, confine it into a narrow channel, so as to form a sort of cataract when the river is much swelled with rain;—but as this interrupts the course of the water a little at these times, the river is made to stagnate backwards for several miles, overflowing its banks on every side, and forming a temporary lake of very great extent; which, from a small island in the midst of it, has obtained the name of *Loch Isib*; *isb* you know being

being the common Scotch word for a small island.

It is, therefore, a general rule that admits of few exceptions, that the large rivers which flow through a considerable tract of country in the Highlands are not of a rapid course; and that, on the contrary, the smaller rivers that run but for a short way, are rapid almost beyond conception, frequently shooting over rocks of a prodigious altitude, and forming cascades of amazing beauty when rain falls in abundance;—but during the dry weather in summer they are mean and inconsiderable.——This distinction between the different kinds of rivers, ought never to be lost sight of by those who want to form a proper idea of that country.

It sometimes happens, however, that these furrows, as we have termed the hollows between the hills, are interrupted in their course before they reach the sea, by some rock or other impediment running across the valley, which stopping the current of the river, makes it regorge backwards, forming a lake that fills the whole valley, till the surface of the water in it, rises to the same level with the top of the object that bars the
the

the valley; over which the river at length forces its way, and usually flows from thence with a current more rapid than is common towards the sea.

AND as these vallies are usually very narrow and of great length, the lochs assume the same form, running backwards till the bottom of the valley comes to be above the level of the water. These, therefore, will be long in proportion to the height of the obstructing bar, and the horizontal position of the bottom; so that, on account of the general flatness of the country, these lochs are usually of very great length in proportion to their breadth;—a circumstance which could not happen, were the general slope of the country considerable in any direction.

THE most remarkable of these lakes is that called *Loch-Ness*, which occupies, for twenty-four miles in length, one of the most remarkable furrows of this kind in Scotland, which runs quite across the island. The west end of it being deeper than the surface of the sea, and without any bar, extends quite into the Atlantic ocean, forming that long and narrow inlet called *Loch-Oyl*,—that part of the furrow at the west end of
Loch-

Loch-Nefs being filled up for a short way by some low earth; but it soon sinks again into another basin of considerable length, called *Loch-Lochy*, which is only prevented from joining Loch-Oyl by a small low bar that rises near Fort William; nor is either it or the bar that separates Loch-Nefs from the sea at the east end, elevated to any considerable height above the level of the sea.

ANOTHER of the same form, and nearly of the same length, is called *Loch-Sheil*.—Numerous others of the same kind, although of less note than these, might be mentioned, which it would be tedious here to enumerate. I have only taken notice of them here to induce you to remark, of what infinite benefit these would be to the country in facilitating the carriage of weighty goods through it, should extensive manufactures ever chance to be established among them; because from each of these lochs, other straths branch off, running still farther into the heart of the country, and terminating in this as their common centre.

SUCH is the situation of these countries so little known to other nations, and so seldom surveyed by the discerning eye of philosophic attention.

To

To a man who had a full idea of the vast importance of the advantages that might result from the particular formation of these countries, I cannot think of a picture that would afford more pleasure, than an accurate terrestrial chart (if I may use that term) and map of that country, on which should be delineated the courses of the several rivers, with their corresponding straths, and circumjacent mountains; marking all along the course of the rivers, the elevation above the level of the sea, as well as the altitude of the several ridges of mountains around them, in the same way as the sounding on a sea-chart are marked. How often have I traced in my own mind the idea of such a chart!—how often wished that it might be executed!—But, in my humble sphere, you know an ineffectual wish it all that can be expected.

This hydro-geographical sketch of the country was necessary, to enable you to form a distinct idea of the manifold advantages that it enjoys for carrying on the woollen manufacture, which you will now be able to perceive with the greatest facility.

You will have remarked already, that whatever advantages the parish of Halifax possesses,

in consequence of the abundance of running water, is enjoyed in an equal, if not superior degree, through all that country.

THEIR fuel is in equal abundance, and as easily procured; many of the hills being covered with inexhaustible stores of fine peat, which might be easily brought down to their several habitations.

WITH respect to provisions, the advantage is greatly in favour of Scotland. For there, beef and mutton could at all times be had in prodigious abundance; and on account of the remoteness of their situation, at a much lower price than in Yorkshire. Potatoes and garden-stuffs of all sorts could be reared to the greatest perfection, and in great abundance, at a small expence; the soil, although steep, being in many places exceeding fertile, and at present of hardly any value at all.—The neighbouring seas and lochs swarm with the finest fish of all sorts which could be caught at all seasons, and sold to the inhabitants at a price that would be reckoned nothing at all in almost any part of England *. And oat or barley meal, the only

* From the month of January to June, salmon are caught

kinds of grain at present used by the inhabitants, could be obtained by sea from the neighbouring low countries of Scotland or Ireland at a very moderate price.—On all which accounts it must be allowed, that the inhabitants might live at a much smaller expence than in Yorkshire, an advantage of no small importance to a manufacturing part of the country.

BUT the circumstance in which these countries have the most decided advantage over Yorkshire and perhaps every other part of the world possessing the other advantages they enjoy, is the facility of carriage, not only for their manufactures and provisions, but for their raw materials of every sort;

in vast abundance in every river there, and are often sold for a penny or three halfpence per pound fresh taken.—From August till the middle of December herrings are caught in such abundance on all the arms of the sea, on the west coast, as to be sold from a halfpenny to a penny per score.—Haddocks and whittings are caught in vast abundance at all seasons, and are the largest and best that are seen on any coast; but a fish called *Spr* are still more abundant than either of these.—Cod and Ling swarm on the west coast, and could be caught in any quantities, were there a constant market for them fresh;—but their climate is not the most favourable for drying these large fish;—the only way that the inhabitants of these coasts can dispose of them at present.

together with the choice of markets that they would enjoy on this account. For, as few of these places are above ten or fifteen miles from some of these arms of the sea on either side, or fresh water-locks, to which they could always have access by plain and level roads, every article they had to buy or sell in any part of the world, could be transported at an expence scarce perceptible.—

And as some of the friths on the east coast run up so far as to be within a few miles of meeting others on the west, the road between the two being carried through a level frith of only eight or ten miles extent*, they could have it in their choice to send their goods either to the eastern or western markets; and thus by an easier and safer navigation than from the Humber, could ship their goods for the Baltic, Germany, or Holland; and with equal facility to Spain, Portugal, Italy, the Levant, or North America; so that they are open to either sea, can take advantage of every wind, and have it in their power to trade to any country on the globe.

* This is particularly the case between Loch Ness and Loch Oyl, and between the frith of Dornoch and Loch Broom, and, although at a little greater distance, between the head of the bay of Cromarty at Dingwall, and the west coast. Roads are not yet made in other places.

THIS

THIS could even be done almost in the present situation of affairs. But if commerce had introduced opulence among the inhabitants of these regions, there might easily be opened different modes of communication between distant places, by means of the lakes and level straths, that have not as yet been dreamed of.

BUT although they should be possessed of even greater advantages than these, if greater could be, for the reasons that have been already alledged, unless they shall be possessed of wool of their own in abundance to keep their manufacturers employed, it will be difficult to establish a flourishing manufacture among them. And as it has been already shown, that this country is better fitted for rearing fine wool than any other in Europe, it behoves the gentlemen of property to exert their most strenuous efforts to mend the breed of sheep in that country, and to encrease the number of their flocks. I shall therefore offer you in my next some thoughts that have occurred to me about the most effectual way of accomplishing this design. — I am, &c.

O B-

THE NATIONAL INDUSTRY

It is possible to be disappointed in the present situation of affairs. But it is equally possible to be disappointed in the future. There is no doubt that the present situation is a very bad one. But it is equally true that the future is not yet determined. It is in our hands to make it what we please.

But although they should be helped of even greater advantage than that, a greater could be. For the reasons that have been already stated, unless they shall be protected of wool of their own in abundance to keep their manufacturing expanded it will be difficult to establish anything resembling a wool industry. And it has been already shown that this country is better suited for raising fine wool than any other in Europe. It is above the question as to property to export their wool to some other country and need the price of sheep in that country, and to increase the number of their flocks. I shall therefore offer you in my next some thoughts that have occurred to me about the most effective way of accomplishing this design. — I am, &c.

Yours very truly,
J. B. Thompson

OBSERVATIONS

ON

NATIONAL INDUSTRY.

LETTER ELEVENTH

C O N T E N T S.

As Scotland is so well adapted for rearing fine wool, and carrying on the woollen manufacture, a plan is here pointed out, by which the breed of sheep, and quality of the wool might be effectually improved.—A society for this purpose proposed.—Hints as to the most likely means of making their efforts prove effectual.—High premiums proposed to be given for rearing or introducing fine rams,—and other sorts of fine sheep.—Explanations.—A fund for this purpose might be easily raised.—Scotland more favourable for introducing an improvement of this sort than England.—The present time peculiarly calculated for favouring the attempt.—Way in which the woollen manufacture might be introduced with the smallest trouble or expence.—This manufacture could be more easily introduced into the Highlands and other parts of Scotland than any other,—and why.—The British legislature have adopted improper ideas with regard to the commerce of wool for a century backwards.—English wool much inferior in quality now to what it formerly was.

THE OBSERVATIONS ON THE

WORTH OF THE WOOLLEN MANUFACTURE IN SCOTLAND

OBSERVATIONS

ON THE

WORTH OF THE WOOLLEN MANUFACTURE IN SCOTLAND

NATIONAL INDUSTRY.

IN A LETTER TO MR. ***** LONDON.

LETTER ELEVENTH

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with others, and produce a change in the qualities of any other breed with which they may be associated, in proportion to the communication they may have had with them; and as one male is sufficient for a great number of females; it is plain, that if all the bad rams in in any district were destroyed, and others of a better kind were introduced in their stead, the lambs would be considerably improved. And if care were taken still to provide fine rams for these young ewes, the breed would be still farther mended; so that, after a few generations, the race would become nearly as fine as the rams; as they would improve in a geometrical progression, even without any change at all of the ewes. But as good rams cannot be brought from any considerable distance but at a very great expence, even this easy improvement cannot be expected to become of general service, unless some strong public encouragement is given to the importers of these. Nor do I know any occasion in which premiums could be distributed with a greater prospect of success than in the present case; because, if by this means a good breed of sheep should be once introduced in general throughout all this country, they would continue afterwards to

propa-

propagate their own kind without any care or trouble; so that a permanent effect would be produced from a temporary exertion. But if we wish that these effects should be great, the exertion must be spirited.

SOME years ago, a number of public-spirited gentlemen in this country entered into an association, and instituted a society, for encouraging arts, sciences, and agriculture in Scotland. But unluckily their views were too extensive, and their efforts having been divided among such a multiplicity of objects, became feeble, and their effect imperceptible; so that many of the members finding little good to result from their institution, gradually withdrew their contributions, and the society was dissolved. But if they had confined their views to a few particular objects that were naturally susceptible of improvement by means of premiums, it is not to be doubted but their efforts might have been attended with success. We must concentrate our efforts, if I may use that phrase, and bring them to operate with powerful influence within a narrow sphere, if we hope to produce any powerful improvement by this means. In vain may we hope that a piece of
metal

metal will be melted by the continued natural heat of the sun acting on it for any length of time; but if we concentrate his rays to a point, that will be effected in an instant which never could have taken place if they had continued to act separately for all the successive ages of time. In like manner, immense sums may be thrown away in feeble and unavailing attempts to promote improvements continued for ages, which might have been at once effected at a thousandth part of the expence by one intense and uninterrupted effort.

As nothing can promise to be of greater utility to the public in general, or a more certain advantage to men of landed property in this part of the island, than the introduction of the woollen manufacture into it, I would propose, that a voluntary subscription should be opened, and a society formed of such subscribers, for the sole purpose of encouraging the growth of wool, and introducing and properly establishing the woollen manufacture in Scotland: Each subscriber engaging to continue the annual payment of whatever sum he chose to specify, for at least ten years certain: The money to be distributed by a committee to be elected by the

the members in such manner as should be approved of by the society, according to laws that they themselves should agree to.

If a scheme for this purpose were properly digested, and adopted by some men of influence in this country, I make no doubt but a sum altogether sufficient for this purpose could be raised by voluntary contribution; although other means might perhaps be fallen upon to assist them, if it should be found necessary.

Let us suppose, then, that such a society was instituted, and that their funds were found sufficient for the purpose intended: the premiums under-mentioned, to be distributed annually for ten years certain, would, according to my humble apprehension, produce a most amazing effect.

For the greater facility in distributing the premiums, and that no part of Scotland might be exempted from the influence of them, it would be proper to divide it into four districts, each of which should be entitled to its own class of premiums.

THE

THE first district might comprehend all the south part of Scotland; being bounded on the north by the friths of Forth and Clyde, and the great canal that joins these together. The capital of this district might be Peebles.—To be called *the district of Peebles*.

THE second district might comprehend the West Highlands; being bounded on the south by the great canal, on the east by the great road leading from Edinburgh to Inverness, and on the north by Loch-Ness and Loch-Yel, and a line drawn between these two, including the isles of Mull and Coll, and all the other islands to the east of these opposite to this district. The capital of this district to be *Taymouth*.

THE third district might include the eastern parts of Scotland between the friths of Forth and Murray; being bounded on the west by the great Highland road aforesaid. The capital of this district to be *Kincaidine O'Neil*.

AND the fourth district to include all the northern parts of Scotland, with the remaining islands to the west and north. The capital to be *Dingwall*.

THESE

THESE divisions, or others that might be judged better, being once established, it would be proper for the society to come to a determination what sort of sheep it would be best to encourage most in each of these districts, and to publish their premiums accordingly. But as fine carding wool is much more wanted in this island than combing-wool, and will always be in greater request, it would probably be reckoned most eligible to give the greatest number of premiums for the encouragement of it. And as the sheep in the north of Scotland at present carry shorter and finer wool than in the south, let us suppose that it was resolved to encourage the growth of short wool in the three northern districts, and that of combing wool only in the first.

ACCORDING to the ideas already explained relating to the efficacy of premiums, I am of opinion that less than the following would not produce the desired effect; but if these were regularly distributed, and continued for a sufficient length of time, I have not the smallest doubt, but as fine wool, or perhaps finer, would be produced in Scotland, than is found at present in any part of Europe, or perhaps the whole world.

Premiums

**Premiums proposed for encouraging the
growth of fine wool in Scotland.**

First Class of Premiums.

For the best Ram, the property of any
person within the first district, or
that of Peebles, two years old, car-
rying the greatest quantity of long
combing-wool in proportion to its
size, of the finest staple, and best
quality, - - - £ 100

For the second ditto, - - - 50

For the third ditto, - - - 25

For the fourth ditto, - - - 15

For the fifth ditto, - - - 10

For the sixth ditto, - - - 8

For the seventh ditto, - - - 6

For the eighth ditto, - - - 5

For the ninth ditto, - - - 4

For the tenth ditto, - - - 2

Total, Carried forward, £.—225

Brought forward, £. 225

Second Class of Premiums:

**For the best half score of Ewes,
two years old, the property of
any person within the district
of Peebles, which have the fi-
nest and best fleeces of long comb-
ing-wool,**

	-	-	£. 50
For the second ditto,	-	-	25
For the third ditto,	-	-	15
For the fourth ditto,	-	-	10
For the fifth ditto,	-	-	8
For the sixth ditto,	-	-	6
For the seventh ditto,	-	-	5
For the eighth ditto,	-	-	3
For the ninth ditto,	-	-	2
For the tenth ditto,	-	-	1
Total,	-	-	£.—125

Carried forward, £. 350

Brought forward, - £. 350

Third Class of Premiums.

For the best score of Ewe-Lambs, that have been bred by, and are the property of, any person within the district of Peebles, carrying the finest and best fleeces of long combing wool, £. 50

For the second ditto, - 25

For the third ditto, - - 15

For the fourth ditto, - - 10

For the fifth ditto, - - 8

For the sixth ditto, - - 6

For the seventh ditto, - - 5

For the eighth ditto, - - 3

For the ninth ditto, - - 2

For the tenth ditto *, - 1

Total, - - £.—125

Carried forward, - £. 475

* One of the principal reasons for advertising premiums for lambs, is that being chosen at this age, it is probable, that if all other circumstances are equal, those which were in best order would be picked out of each flock by the respective owners to whom they belonged. And as the lambs of such ewes as give most milk will usually

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Brought forward, £. 476

Fourth Class of Premiums.

For the five best Ram-Lambs, that have been reared by, and are the property of, any person within the district of Peebles, carrying the finest and best fleeces of long combing wool, £. 50

For the second ditto, - - 25

For the third ditto, - - 15

For the fourth ditto, - - 10

For the fifth ditto, - - 8

For the sixth ditto, - - 6

For the seventh ditto, - - 5

For the eighth ditto, - - 3

For the ninth ditto, - - 2

For the tenth ditto, - - 1

Total, - - £.—125

Amount of Premiums distributed } £. 600
to the district of Peebles, - }

ally be in best order at this season, there would be a chance that the breed of this kind of sheep would be in general preferred for breeding from, and thus be more increased than any other sort.

THE rams to be produced at Peebles upon the last Wednesday of May each year, to be there inspected, and the premiums determined by proper judges appointed by the society for that purpose; and the ewes and lambs on the Thursday after.

THE proprietors of the sheep that gain any of the premiums in the first or second class, shall give bond for £. 500 Sterling, to be forfeited by them, if these shall be, with their knowledge or consent, carried out of that district for at least one year after the premiums are gained, unless in the case afterwards excepted. And the gainers of any of the premiums of the third and fourth classes, shall also give bond for £. 500 Sterling, to be forfeited if these sheep shall be voluntarily carried out of the district for at least three years afterwards, unless in the case excepted. And to ascertain the identity of the sheep, the judges shall cause them to be marked each class with their own particular mark. And in case of the death of any of these sheep, the proprietor shall shew the carcase to the minister of the parish, or the nearest justice of the peace; whose attestation will be accepted of for recovering the bond. And in case of any of them
being

being stolen or amissing, the attestation upon oath of the shepherd who kept them, before a justice of the peace, that to the best of his knowledge, the sheep so amissing were either lost or stolen, and not sold or otherwise disposed of by his master, together with the oath of the master, if called for, shall entitle him to retire his bond, unless a proof can be brought of their having falsified their oath.

THIS clause to be always understood with regard to the other classes of premiums where bonds shall be granted.

IN the same manner let four classes of premiums be assigned for each of the other three districts, the same with these in every respect, excepting that the premiums are all assigned for sheep carrying short carding-wool. The sheep to be showed at Taymouth on the first Wednesday of June;—at Kincardine O'Neil the second; and at Dingwall the third Wednesday of the same month;—the ewes and lambs on the following Thursday at each of these places respectively. By which arrangement the judges could go round their circuit without any sort of inconvenience.

BUT

BUT as it might happen, that some persons might raise long combing wool in the northern districts, or short wool in the Southern one,—that these might have an equal chance of having due encouragement, and that a spirit of emulation might be excited between the different districts, as well as to ascertain with the greatest possible precision the most valuable sheep in the whole country, it would perhaps be proper to distribute the two following classes of premiums,—the number of which, if all the others had been marked would have been as under.

The

The Seventeenth Class of Premiums.

For the best Ram of the long-wooled
sort, the property of any person in
Scotland, without any limitation as
to age, carrying the finest and best
fleece,

	-	-	-	£. 200
For the second ditto,	-	-	-	100
For the third ditto,	-	-	-	50
For the fourth ditto,	-	-	-	25
For the fifth ditto,	-	-	-	15
For the sixth ditto,	-	-	-	10
For the seventh ditto,	-	-	-	8
For the eighth ditto,	-	-	-	6
For the ninth ditto,	-	-	-	4
For the tenth ditto,	-	-	-	2
Total,	-	-	-	£.—420

The Eighteenth Class of Premiums.

For the best Ram of the short-wooled
sort, the property of any person in
Scotland, without limitation as to age,
carrying the finest and best fleece, £. 200

For the 2d,—3d,—4th,—5th,—
6th,—7th,—8th,—9th, and
10th,—as above,—in all, 220

Total, £.—420

THE

THE gainers of the two highest premiums in either of the two classes above mentioned, shall give bond for £. 1000, and the gainers of all the inferior premiums of each of these classes shall give bond for £. 500 Sterling, that the sheep which gained the premium, shall not, with their consent, be carried out of Scotland, for one year at least after the premium shall be adjudged to them. And if any of these shall have gained any of the other classes of premiums, their former bonds shall be rescinded, and (the owner nevertheless retaining both premiums) the proprietor be at liberty to carry them to any of the districts he may think proper.

THE sheep to compete for these two classes of premiums to be showed at Perth on the fourth Wednesday of June; and it shall be reckoned no breach of bond for any person who has gained a premium in any of the foregoing classes, to carry their sheep to Perth with a view to compete for this premium, if they be again returned to their respective districts with all convenient speed.

As a still greater inducement to excite the
attention

attention of the farmer to rearing fine wool, if the funds were found to be sufficient for it, the two following would be of great utility..

Nineteenth Class of Premiums.

For the finest fleece of short carding-wool approaching to the quality or excelling that of Spain or Persia, that has been cut from any sheep the property of any person in Scotland,

	-	£. 100
For the second ditto,	-	50
For the third ditto,	-	25
For the fourth ditto,	-	15
For the fifth ditto,	-	10
For the sixth ditto,	-	8
For the seventh ditto,	-	6
For the eighth ditto,	-	5
For the ninth ditto,	-	4
For the tenth ditto,	-	2
Total,	-	£. 225

Twentieth Class of Premiums.

For the finest and best fleece of long
 combing-wool, approaching to, or
 excelling the best English wool of
 that sort, that has been shorn from
 a sheep the property of any person
 in Scotland, - - - £. 100

For the 2d,—3d,—4th,—5th,—
 6th,—7th,—8th,—9th, and
 10th ditto,—as above, in all, 125
 Total, - £.—225

THE competitors for these two classes of pre-
 miums shall send the respective fleeces, each in
 a bag sealed up, directed to Mr. ——— at
 Edinburgh, before the third Wednesday of
 August each year, when the judges are to in-
 spect them. Along with each fleece let an
 attestation be sent, signed by the parson of the
 parish where the fleece was produced, or a
 justice of the peace, and two witnesses, import-
 ing that they saw the fleece shorn from a sheep
 in the possession of, and to the best of their
 knowledge belonging to, such a person (here
 giving the name and designation of the person
 whose property it was at shearing-time, with a
 note

note in writing from the owner himself, acknowledging that the sheep from which the fleece was shorn is his property); and let this packet be sealed up in the presence of the attesting parson, or justice of the peace, and sealed with their respective seals, along with that of the owner, and inclosed within the larger bag along with the fleece: the small packet not to be opened till after the premiums are adjudged; nor any of the bags or packets to be opened on any account but in the presence of the judges.

THE fleeces which obtain the premiums in these two classes to remain the property of the society; the first of each class every year to be laid up and properly secured in a repository set apart for this purpose, with a view to remark in future times the comparative fineness of the wool of Scotland at different periods; and the next best to be manufactured into some sort of manufacture that they are best fitted for, by the most skilful manufacturers that can be found in the country, at the expence of the society, to be also laid up in their repositories, that posterity may observe the gradual advancement of the skill of the manufacturers also.

I DOUBT

I DOUBT not but you will think these premiums are very high. I think the same; but I think it necessary they should be so, if we want to excite a general spirit of emulation among all ranks of people, and turn their attention strongly to this object; and unless we do this, we may be said to do nothing at all. Without a very great prospect of being amply rewarded for the immense trouble of procuring and bringing exceeding fine sheep from distant countries, it is not to be expected that this would be at all attempted: but with the temptation that this series of premiums would afford, it is hardly possible to say what bounds could be set to the efforts of enterprising individuals. The fine woolled sheep that may be in Scotland or England, would be selected with the utmost care, and treated with the utmost attention. The finest sheep in Spain would quickly be brought hither; the Tartar hordes would be explored, and their most valuable treasures brought to our shores; even Persia and Thibet itself would be ransacked for this purpose, and the most valuable sheep from every part of the world would be brought to our island, and every art that could tend to meliorate the quality

ty

ty of the wool be searched out with the most prying curiosity.

AND what would be the amount of the mighty sum necessary to produce all these great effects? Even if the whole were paid as above, it would amount to no more than £. 3690,— which, if equally divided among all the men of landed property, it is believed would not amount to more than two shillings or half a crown on the hundred pounds Sterling of real land-rent in Scotland; at any rate, it could not amount to one twelfth part of the land tax when at four shillings in the pound in England. This is such a very trifling sum, that were the subscription any thing like universal, more than ten times its amount might be raised without being sensibly felt, even although no other aid could be obtained: but as the Honourable board of Trustees for encouraging manufactures in Scotland, do not scruple to give annually a sum nearly equal to this for encouraging the linen manufacture, it is hardly to be doubted but they would assist this likewise if a proper application were made to them. Our gracious Sovereign himself might probably be induced to assist by his royal bounty such a public-spirited under-

undertaking, by which so many of his subjects would be so highly benefited, should it ever be found necessary. But for the trifling sum mentioned above, or even double that, I should think it a reflection upon the landed gentlemen in Scotland to require any assistance, or even to accept it from any one, were it not voluntarily offered as a public mark of approbation of their plan in those who gave it.

If by means of these premiums, and other correspondent encouragements that might be given, a fine breed of sheep were once introduced into Scotland, the amount of these premiums might be very much diminished, although it would be prudent always to continue something of that sort, to be a spur to the emulation of individuals. But a hundred pounds *then* would be as efficacious as a thousand now; so that should the society continue, they would be enabled to apply their funds to other plans of improvement that might then be discovered to be necessary.

If the gentlemen in Scotland should resolve to adopt some such plan as that here recommended, they could put it in execution with much greater facility than almost any other people on the

the globe; and circumstances seem to have taken such a turn at present, as clearly to indicate that all matters are just now ripe for the execution of such a grand national improvement. The number of sheep is yet but small in proportion to what they ought to be; and as many judicious persons seem to be now become sensible of this, and are therefore beginning to encrease their flocks,—now, if ever, is the time to introduce a valuable breed; because it is much easier, by a little well-timed attention, to get them good at first, than to correct their defects after the number has become very great.

IN this respect any attempts of this sort might be expected to succeed much better in Scotland than they could do in England; and as the fleece would bear a much greater value in proportion to its carcase in most parts of Scotland than in England, this would be another strong inducement to the inhabitants of the former to bestow a much greater attention to this article, than the others could ever be prevailed on to do.

AND if we add to this, that Scotland is possessed of so many small islands and holms, upon which any particular breed of sheep could be kept

kept with the greatest certainty from intermixing with any others, we could by means of these have the best opportunities of making any experiments that might be necessary to ascertain the comparative value of any two breeds with the utmost precision; and when we had once obtained the most valuable sort, they could be kept perfectly distinct from others for any length of time; which might serve as a perpetual nursery for recruiting the flocks on the main land, where they would necessarily become more liable to degenerate.

THESE are circumstances that ought not to be overlooked, and strongly point out the present time as the most favourable that can ever be expected for carrying this salutary plan into execution.

THERE occurs to me only one strong objection to the plan of improvement here proposed, viz. the difficulty of procuring judges who should be able to distribute the premiums with strict propriety. Gentlemen who have not made that a particular study, will hardly be ever able to attain that accuracy in distinguishing the different degrees of fineness of wool that a professed wool-

wool-orter possesses;—and all mankind are so apt to take a particular bias in matters of this sort, for some particular breed of sheep, that there is great reason to fear, that the judge might often be biassed, without intending it, so as to favour in some cases a particular sort, beyond the degree that it strictly deserved.—All that can be done in such a case, is to guard as much as possible against this.

BUT nothing can so well ascertain the intrinsic value of any article of commerce as a free and open market, where the purchaser will always prefer what suits his purpose best, and give the highest price for the most valuable sort, and where the vender will at all times be induced to prefer that particular line of conduct that on the whole turns out most to his own profit, so as quickly to correct any unreasonable bias he may at any time have adopted.

WHEN fine wool should by these means come to be reared in abundance in Scotland, it would be high time to think of introducing the woollen manufacture on a large scale, and of extending it over the country.—But before that period it would perhaps be prudent not to grasp at too

much. A few sensible men who understand that branch of business, ought to be encouraged and supported: for in the beginning of any new manufacture such support is always necessary even where materials can be had at the lowest price; because the operators must always be awkward, and their wages high, with other troublesome circumstances too tedious to enumerate, which gradually disappear after the manufacture has been established for some time.

It would likewise be prudent in these circumstances to confine our chief efforts to manufactures of a coarser sort, than to attempt those of the finest kind at the beginning:—for as the operations relating to these last are of the most delicate sort, they have less chance of being performed with accuracy at first, than after the operators have gradually improved themselves by long practice in a coarser manufacture of the same kind; and as these fine cloths are chiefly to be worn of people of high rank, who always aim at elegance in their apparel, a small deficiency in this respect will be less apt to be overlooked in these fine kinds of cloth, than it would be in cloths that were rather purchased for utility than show. Add to this, that the demand

mand for these serviceable cloths must always be more considerable than for the others, if they are sold at a reasonable price, and I think the balance will be much in their favour at first.

IN the mean time every method ought to be taken to procure able manufacturers in all branches, as circumstances might occur,—by watching opportunities when any accidental stagnation of trade throws these out of employment in England,—as well as by sending young men of good talents to serve an apprenticeship in the best manufacturing towns in England;—but above all, by obtaining a sufficient number of experienced wool-sorters, without which no woollen manufacture can be properly established; and by instructing the women of the country as soon as possible to spin with neatness and accuracy, which is a matter of the highest importance.—And after they are once initiated into the practice a little, a very small sum applied judiciously in premiums, would produce a wonderful effect.

It likewise well deserves to be noted here, that no other new manufacture could possibly be attempted with the prospect of meeting with

so few obstructions in Scotland as the woollen manufacture; as there is hardly a woman who has been bred in the country, between Solway frith and Johny Groat's house, who cannot spin wool in some sort; especially in the Highlands, where this is, and always has been their favourite manufacture, and where they at present work tartans and other woollen stuffs with a neatness that is indeed surprising, considering the small conveniency they have for performing any of these operations.

In this manner we would provide a constant home market for our wool, and probably lay the foundation of a manufacture that may continue to flourish, when it will be forgotten in many other parts of the island where it is now carried on with success. For the British senate, while their commercial ideas with regard to the production of grain has become liberally enlarged, seem as yet to have but a very partial idea of the most effectual means of encouraging and securing the woollen manufacture upon a lasting basis; which in a great measure from this cause is now in a much more tottering condition than is generally imagined: for, in consequence of the monopolish ideas that have prevailed in
England

England for more than a century past with regard to the commerce of wool, it cannot be doubted, but that the quality of the wool produced in Britain is much inferior to what it was before that period; of which I could here produce very satisfactory proofs if you should think it necessary.

BUT as this letter is already of a sufficient length, and as you may not perhaps wish to enter upon a new subject that might give room to more extended speculations, I shall here conclude for the present, and shall either stop altogether, or go forward, as shall be most agreeable to you. It is now long since I had the satisfaction of hearing from you. I therefore expect a letter soon,—in which I hope you will express your sentiments on the subject of these letters with the same unreserved freedom that I have communicated them to you.—I ever am with sincere regard, Dear Sir, &c.

END OF THE FIRST VOLUME.

